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HENRY C. PEARSON, Editor

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TABLE OF CONTENTS ON LAST PAGE OF READING.

THE PRACTICABILITY OF RUBBER PAVEMENTS.

THE contemplation of the great increase in the crude rubber supply within the next few years invariably prompts the question—what will we do with it? And the readiest answer to the question seems to be—rubber pavements.

Any consideration of the practicability of rubber pavements brings us at once to the three examples of this sort of road construction to be found in London, viz., the court yards of the Savoy and Claridge's hotels and the approach and exit of the Euston railway station. These are the noteworthy instances of rubber pavements which have been laid a sufficient length of time to afford a practical basis for discussion. The two hotel court yards were paved with rubber, one ten and the other thirteen years ago, the primary object being to deaden the clatter of the horses' hoofs and the rumble of the wheels. The pavement was in the form of slabs about 2½ inches in thickness. These slabs seem to have served their purpose very satisfactorily. They have worn in spots to one-half their original thickness, but from present appearance give promise of several more years of service. To be sure, they have not been subjected to the extreme wear of the heavy trucking on the ordinary roadway, but in one respect their treatment has been unusually severe, for they have had to endure the wear of the constant turning of vehicles. Another trying experience that has come to them latterly has been the use of studded tires. These steel studs are not beneficial to any sort of roadway, but on rubber their effect is naturally especially injurious. The oil of the motor car is another foe to rubber roads; but notwithstanding these unfavorable conditions the rubber covering in these London hotel yards has given a good account of itself.

The case of Euston station presents even a stronger argument for the possibilities of rubber paving, for part of this paving that is under the arch through which vehicles depart from the station was laid thirty-two years ago and, tho worn in some places to an inch and a half from an original thickness of two inches, is still serviceable and in no immediate need of relaying.

Renewed interest in this subject has recently been awakened by a lecture delivered before the Chemical Engineers of London by Dr. Philip Schidrowitz, the well known writer on matters pertaining to rubber. He devoted much of his paper to the practicability of rubber pavements, going into carefully estimated details regarding the initial cost of the pavement, the expense of laying it and of its subsequent maintenance. Basing his calculations on crude rubber at two shillings per pound, and on a composition that should be one-third rubber, he estimates that a ton of paving material would cost £100, as compared with a cost for asphalt of £2 to £3 and of cement, concrete or stone of £2 to £5. He then compares the cost per square yard of rubber pavement with that of the materials now generally in use, and finds that a rubber road surface of the proper thickness would cost about fourteen times as much as asphalt or macadam and about seven times as much as granite or wood. On the whole, considering its large initial cost, Dr. Schidrowitz doubts the practicability of the rubber pavement, but, he observes, in concluding his discussion of the subject, "the question is replete with interest, and in view of its possibly important bearing on the future of the rubber industry, is at least worthy of a serious experiment."

This lecture before the London chemists will undoubtedly be widely read. It is a valuable contribution to a highly important discussion. Its figures are the result, we may rest assured, of most careful calculations. The initial cost of rubber roadways on a large scale, even with

fifty-cent rubber, would be prohibitive, but with rubber at fifty cents such roadways on a limited scale are sure to come. Their noiselessness and cleanliness—their freedom from rattle, jar and dust—are bound to bring them into constantly increasing favor where these advantages are most desired—as around hospitals, churches, schools and lecture halls, around courts, in fine residential avenues, and even about apartment houses and office buildings of the better sort. When rubber sells at fifty cents there will be plenty of rubber paving.

PRIZES FOR NEW USES OF RUBBER.

IN the department entitled "Some Rubber Interests in Europe," found elsewhere in this number, there is reproduced a letter recently sent out by the Secretary of The Mincing Lane Tea and Rubber Share Brokers' Association Ltd. to the rubber plantation companies—of which there are between 500 and 600—inviting their co-operation in a plan of offering substantial prizes for the suggestion of new uses for rubber. The association gives an earnest of its own interest in this matter by offering a prize of 100 guineas, to be given at the Rubber Exposition to be held in London next summer, for the best new use of rubber submitted at that time; and also by its further offer to subscribe £50 to any fund contributed by the planters.

This episode shows the changing conditions of the rubber industry. Hitherto prizes have been offered for inventions and discoveries looking to an increase in the amount of crude rubber produced, but these new offers are for inventions and discoveries that shall lead to the increased consumption of rubber.

There is no danger—although some pessimistic surveyors of the situation occasionally express such a fear—that there will be too much rubber. Even should the estimates of experts be fulfilled, that the year 1919 will see a production of plantation rubber amounting to over 300,000 tons, which—assuming that the wild output from the Amazon and other localities continues at its present level—will bring the total production well towards 400,000 tons, this amount, vast as it is, could undoubtedly be utilized through the present channels of consumption. When rubber becomes cheap enough it will probably become the universal flooring, and its employment in the paving of streets is capable of an almost unlimited extension. But the problem before the rubber industry today is not so much how to utilize the constantly increasing rubber supply as it is how to use it to the best advantage. That is a problem worthy of the diligent application of the most acute inventive minds. And if the planters shall co-operate to offer substantial rewards for the discovery of new uses of rubber, new uses would undoubtedly be discovered by the thousands; and some of them certainly would be sufficiently practical to utilize all the surplus product of the plantations for many years to come.

GUARANTEEING THE UNGUARANTEEABLE.

AS a matter of fact, isn't the whole tire guarantee idea a fight against nature, an attempt to accomplish the manifestly impossible? From the very character of the service a tire is called upon to perform, can the duration of that service possibly be guaranteed?

It is logical enough to guarantee a watch, because one can predicate the normal treatment of a watch, viz.: that it will be carried quietly in the pocket during the day and wound up with great regularity about the same time each night. The piano can be guaranteed, for the piano runs a normal course. Generally speaking, it stands unmolested in its corner, to be played on with more or less discretion a few minutes or possibly a few hours a day.

But with a tire it is quite different—that has no normal career. When it leaves the factory a dozen different futures may be open to it. It may possibly fall into the hands of a cautious, conservative person who wants to get full service from it and who takes particular pains to inform himself as to how a tire should be treated for its own good, and to the best advantage of its owner. Or possibly it may fall into the hands of the owner's son, just home from college, a reckless scapegrace who regards not principalities or powers, much less tires, and whose only idea of a car is to make it cover the greatest amount of the earth's surface in the least possible time.

Or the tire may be turned over to the tender mercies of a chauffeur, whose business relations with the proprietor of the neighboring repair shop are such that the more abuse the tire receives the better is the chauffeur's financial status. Or, more likely, the tire will fall into the hands of just an average sort of man who has no malicious intention of abusing it, but who doesn't take the trouble to find out how it should be cared for, and who doesn't bother very much about such a trivial matter as proper

inflation, and is likely to let his car stand on its tires all winter long.

So, everything considered, while a tire may leave the factory good for 5,000 miles of travel, it is humanly impossible to guarantee one-half or one-quarter of that amount. So would it not be better if the manufacturer would simply make the best tire within his ability and say "This tire, properly treated, will do 5,000 miles, but I have no idea how it is going to be treated; so here it is and I am through with it"? It would be a great relief, certainly, to the manufacturer, and he could afford to give the consumer considerably lower prices. It would tend to make the sensible consumer much more careful in his use of the tire; and it would make strongly for general veracity, for since time began there has been no other such tremendous temptation to prevarication as the tire guarantee.

DEPENDING ON THE POINT OF VIEW.

A DAILY paper, ruminating on rubber matters, makes the interesting statement that the yearly production and consumption of automobile tires in this country has now reached 60,000,000. As there are about 1,000,000 motor cars in commission, it requires no very profound process of mathematics to determine that each car would be consuming, on an average, sixty tires a year. Making a conservative allowance of $25 per tire, it becomes clear that the average car owner must lay aside from his annual income an item of $1,500 to meet the unescapable tire cost. Possibly there are some timid souls that might shrink from the ownership of an auto if compelled each year to part with $1,500 simply to keep it shod.

But let them take heart, for there is another chapter to this mathematical story. The same writer goes on to say that this yearly output of tires is worth $120,000,000. From which it will appear that the value of tires has dropped to $2 each. Now many a careful car owner who avoids driving over broken bottles and grazing the curb, goes comfortably through the year on a single set of tires —which, at $2 each, brings the auto-shoeing bill down to $8 for the twelve months, or a trifle over two cents a day. Looking at it from this angle, owning an auto is cheaper than staying at home and reading the paper. It all depends on the point of view.

In the meantime, if the statistician of the daily referred to were to revise his figures, placing the annual American consumption of auto tires at six instead of at sixty million, he probably would come appreciably nearer to the facts.

THE DEBT TO THE CHEMIST.

THE motorist, as he skims along the smooth road at 25 miles an hour—or faster, if the fear of the local constabulary has been removed from his heart—may possibly give an occasional thought to the debt he owes to the big factory, with its brawny men and clangorous machinery, that has turned out the tire which enables him to ride on air, while still sticking to the earth. He may even, if he is a man of some imagination, think of the lonely *seringueiro* threading his way through the Brazilian jungle, extracting the latex from one *Hevea* after another. But, as a matter of fact, his real debt is to the patient man who is silently working away in his laboratory surrounded by his tubes, bottles and retorts. The most notable of all laboratories was Mrs. Goodyear's kitchen stove, where, between bakings of the family bread, her indefatigable husband utilized the oven for his interminable batches of rubber, variously compounded. But as he, by the aid of this little kitchen oven, discovered the secret that gave the whole rubber industry its start and made any sort of a pneumatic tire possible, the chemist of to-day in his perfectly appointed laboratory must discover the secrets that will enable the manufacturer to make tires still better, tougher and cheaper.

A WESTERN PAPER HAS MADE THE IMPORTANT DISCOVERY that the rubber plant has been driven from the home and that it no longer dignifies the six rooms and bath that constitute the domicile of the city dweller, nor decorously decorates the craftsman cottage of the suburbanite. According to this authority, it has ceased to be catalogued among the Lares and Penates of American life. And the cause also for this great change is assigned, viz.: that the rubber plant has been of late so extensively exploited in the show windows of the automobile emporiums that it has become thoroughly commercialized and therefore unfitted for the quiet family fireside. Probably the disappearance of the rubber plant from the home—if in reality it has disappeared—is simply one of the whims of fashion; for fashions swing back and forth in matters of household decoration just as they do in the vogue of literature, the choice of dogs and the popularity of dances. The *Ficus elastica* is a comely plant and will undoubtedly be able to maintain its position as an ornament in the home, even tho it has not done very much in the way of adding to the crude rubber supply of the world.

Rubber in Argentina.

By the Editor of The India Rubber World.

Argentine Possibilities—Wild Rubber in the Chaco—The Most Southern Rubber Mill—The Journey to the River Plate—Quebracho—Off Lobo Island—A "Pampero"—Up the River—First View of the City—A South American Paris—Characteristics of the People—To the Rubber Mill.

IT is the habit of Americans to speak wisely and albeit sadly of the immense possibilities of Argentina and of the fact that Europe is profiting hugely by its exploitation while the Yankee is doing nothing. To see if this was notably apparent, and further, because of the rubber interests there, I went to Buenos Aires after visiting Bahia, Rio, Santos and other Brazilian cities.

THE "AVENIDA," BUENOS AIRES.

The rubber interests appeared to be three-fold. In the first place, there was the statement of Ernesto Costa, said to have acquired rubber experience in Madagascar, on the Congo, and in the Bolivian Montana, who discovered rubber trees in the northwestern part of the "Chaco." The Argentine Minister of Agriculture at once dispatched one of his men to explore. He reported that he found a variety of trees called *lecherones* and others called *Ebeas* (*Heveas?*). The latter were the best.

ACROSS THE PLAINS.

The agent gave as the product of the large *lecherones* from 16 to 20 pounds of gum per tree. He further reported that there were localities where rubber gathering was going on, regular camps having been established, estradas laid out, and workmen employed every year. A year later the government commissioned two agricultural experts to take up the study of these trees, and, as far as known, they started for the province of Salta, where the trees were located. It was further light on this interesting matter that I was seeking.

Then there was another matter. Buenos Aires has a rubber factory, which is undoubtedly the farthest south of any in this hemisphere. I wanted to see that, and a lot more.

The boat that I embarked upon at Rio was English and carried tourists chiefly, with a sprinkling of American, English and Brazilian business men. For example, there was one who represented the American dyewood agglomeration. He was interested in quebracho, a wood much used in tanning. He told of thousands of acres controlled by his company — 400,000 in Argentina and 900,000 in Paraguay — of big mills and up-to-date shipping plants. Then there were men from the American Harvester Co., who told of the use of American machines, "because they couldn't get anything else." Again, there were the freight and passenger-car salesmen, who told of contracts given to Americans only when it was impossible to get goods in France or England or Germany. Allowing for individual prejudice, it did seem as if there was a decided leaning away from things American.

THE DOCKS, BUENOS AIRES.

The journey was pleasant in that the sea was smooth and the company good. As it was winter north, it was, of course,

midsummer there, and quite hot. Finally we sighted Lobo Island, and passing between it and the sandy shore of the mainland we were in the mouth of the River Plate. While we were ploughing up its coffee-colored flood we ran into

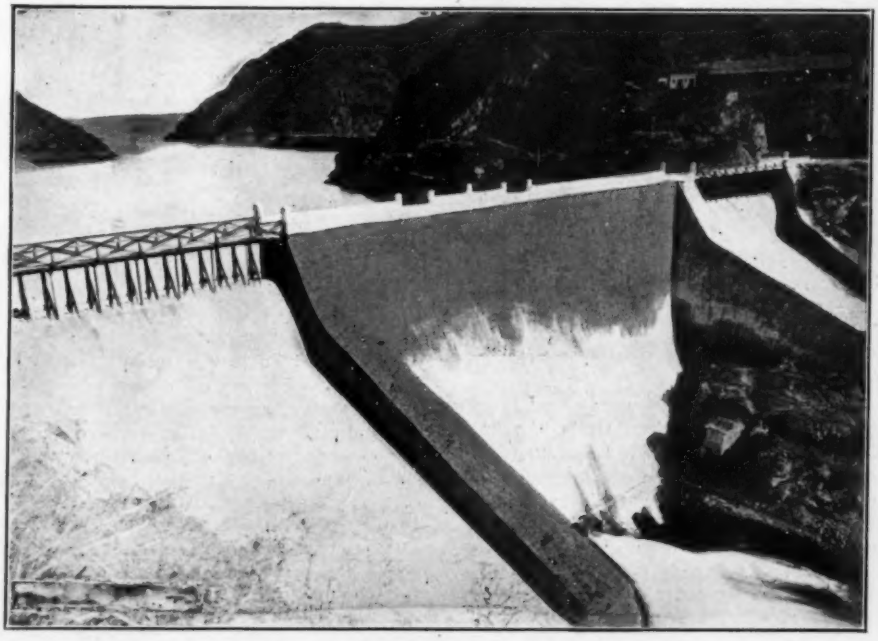
THE WRITER, MR. WILSON, MANAGER, AND MR. SMITH, SUPERINTENDENT.

a "Pampero," a cold wind of the "Texan Norther" order, which promptly brought the thermometer down to 30 or 40 degrees, and instead of sweating we were all shivering.

Be it noted, the River Plate is not attractive from a scenic viewpoint. It is from thirty to one hundred miles in width, and the channel, excellently buoyed, is never more than twenty-three feet deep. Big boats therefore cannot get up to Buenos Aires.

The city from the distance, with its big grain elevators and cold storage plants, reminds one of Chicago. We followed a long procession of steamers up the narrow channel and finally tied up at fine granite docks in a basin that is almost in the city's center.

The Aduana passed our luggage quickly and politely, and soon we were at the Plaza, the best hotel, where they charge $12 a day for room and bath and joyfully extort an even larger rate for meals.



THE FALLS OF IGASSU.

Once in the city, it impressed one as being patterned after Paris. The "Avenida" is a wonderful street lined with beautiful buildings and crowded with jewelry stores. No city in the world has the like. Any attractive novelty sells here, no matter what the price may be, for Buenos Aires is the center of everything Argentine. It is the Mecca of all of the

AMONG THE CATTLEMEN.

well-to-do for the whole country, and it is here that the money made from the vast wheat fields and cattle ranches is lavishly spent. It is a busy city full of electric cars, that almost crowd one off the narrow sidewalks; the people alert, careless, and in spite of the many beautiful saloons, wonderfully sober. There are magnificent public buildings, a jockey club that holds horse races almost daily—with horses that are wonders—and incidentally makes millions annually; and so on. Then only a short distance away is the other side of the picture, the picturesque ranch and farm life shown on as large a scale as anywhere in the world.

But about the rubber factory. It is owned by the India Rubber, Gutta Percha & Telegraph Works at Silvertown, England. Mr. Wilson, the manager, whom I met at their well appointed rubber store in the city, took me to the mill. It is situated far out beyond the Golf Club, and while not close to the river, so flat is the land that in time of high water they go to it in boats instead of carriages. The factory makes small molded goods, battery jars and valves, and perforce repairs all of the city's tires, even tho they be nearly beyond help.

The equipment is a washer, mixer, warmer, calender, spreader, two tubing machines and several vulcanizers. It is run in conservative English fashion, not really as an enterprise, but as an adjunct to the warehouse and an accommodation to its customers.

THE FACTORY FROM THE RAILROAD.

Speaking of tires, there are lots of autos in the city and every known make of tire is used. It may be interesting to note also that there are the following who handle rubber goods:

S. Borok, Buchanan Jordan & Co., Buxton Cassini & Co., Continental Tyre Co., B. J. Ebsworth (agents for Dunlop Tyre Co.), Edwards & Fase (agents for Northern Rubber Co.), Harris & McDonald (agents for North British Rubber Co.), David Hogg y Cia., India Rubber, Gutta Percha & Telegraph Works Co., Limited, and Recht & Lehmann (agents for "Michelin" tires).

DEPARTMENT FOR TIRE REPAIR.

There is also in the city a worthy Italian—said to have been employed by the Pirellis in Milan at one time—who does more or less in proofing fabrics for his own clothing business. I was not able to visit his factory, nor could I find him. The story was rife, also, that the "American Goodyear Co." was to establish a large factory in "B. A." and that the Jockey Club had subscribed millions—more or less—to the scheme. The story was absurd, of course, but was nevertheless told and retold, with additions, until the project assumed proportions almost gigantic.

(To be continued.)

BRAZILIAN RUBBER EXPORTS.

IN a comprehensive report, Consul General Julius G. Lay, of Rio de Janeiro, has grouped various interesting figures regarding the exports of Brazil during the last three years. The totals amounted to: 1910, $310,006,433; 1911, $324,919,767; 1912, $362,346,951.

Of the 1912 exports the United States took about 40 per cent.; Great Britain about 12 per cent.; Germany about 14 per cent.; France about 10 per cent., and other countries about 24 per cent.

The exports of rubber alone were as follows:

	1911		1912	
	Tons.	Value.	Tons.	Value.
Total	36,547	$73,261,558	42,286	$78,125,250
	1911		1912	
Including exports to—	Tons.	Value.	Tons.	Value.
United States	16,146	$31,359,386	21,322	$39,344,927
Great Britain	15,662	32,886,456	14,728	27,042,375
Germany	1,058	1,660,302	1,660	2,399,485
France	3,221	6,403,342	4,436	8,091,635
Belgium	156	316,429	126	433,818

An increase of quantity is thus shown for the United States in 1912, coupled with a reduction for Great Britain. The two countries took between them the bulk of the Brazilian rubber exports.

MANICOBA CULTIVATION IN BRAZIL.

At the recent meeting of the British and Brazilian Rubber Planters and Manufacturers, Ltd., the chairman reported that their representative had been shown a plantation of *Maniçoba* rubber trees which the manager estimated to number 30,000 and to be about seven years old. They had only been experimentally tapped, but they showed plenty of latex, altho it refused to flow freely. The manager thought that there must be some method of inducing the trees to yield fully. In that case they would have an immediate and profitable source of income. Their representative at Lagoa had been making experiments, which he believed to be successful, with that object in view.

According to latest details, 100,000 rubber trees have been planted, mostly ranging in age from one to three years. There are said to be in addition several hundred thousand indigenous *Maniçoba* trees. The company's properties are in the State of Bahia, Brazil.

BRAZILIAN PROSPECTS AS VIEWED FROM MALAYA.

Commenting on a statement that Brazil is getting 17,000 Japanese coolies, the "Malay Mail" remarks:

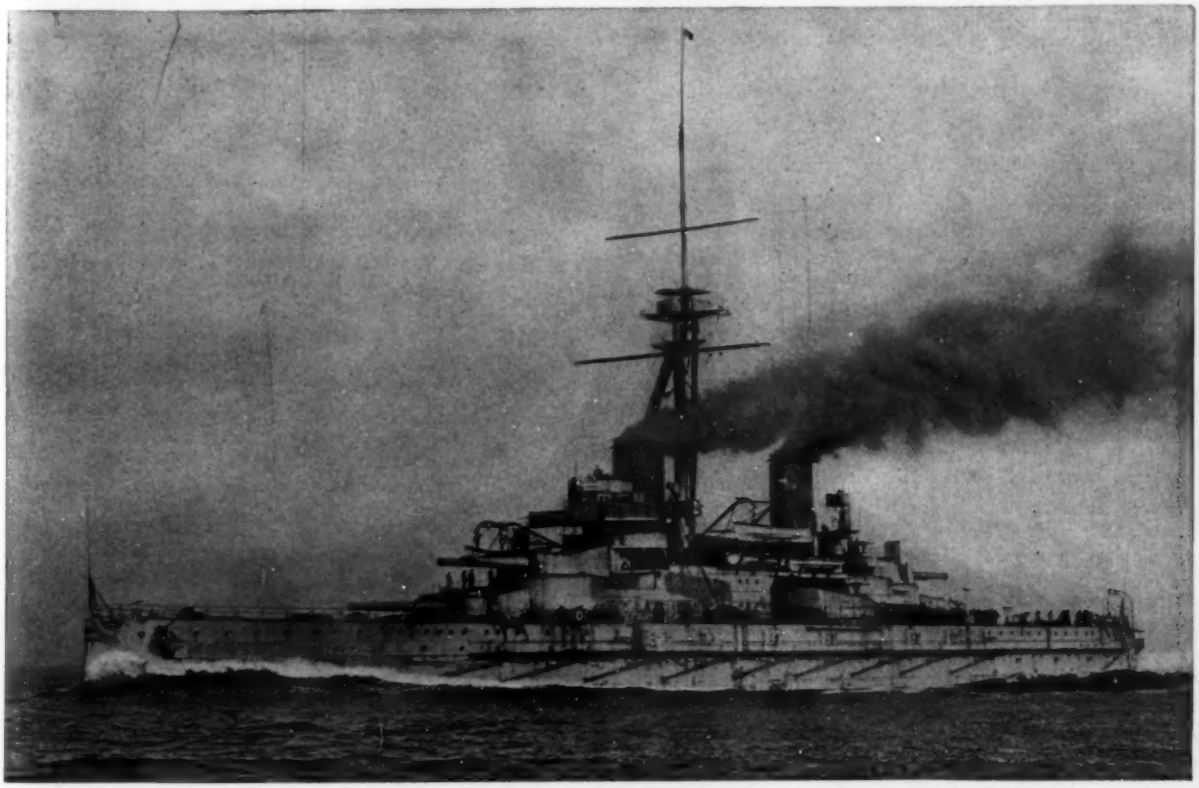
"Respecting the above we doubt whether the Japanese government will permit its natives to work under anything like existing conditions of rubber collecting in Brazil. If proper plantations are started it may be another question, but serious competition from this source could hardly be expected under, say, ten years. The real fight between the two classes of the product must be such that the fittest will survive. Brazil seems alive to this aspect, and to be doing all she can to prevent the loss of what is to her a very important industry. Plantation interests should not rest under the possibly false security that when rubber is below 3s. per pound, Brazil will cease to be a producer. The selling price will have to be well under that, before hard Pará will cease to come to market."

WILD VS. PLANTATION RUBBER.

A statement is attributed to Mr. A. Lampard, to the effect that against an estimated world's consumption this year of 120,000 tons of rubber, the supply from the plantations cannot be expected to exceed 45,000 tons. The balance must, therefore, come from wild sources of supply. He expresses the opinion that if rubber drops to an unremunerative price for the gatherers of the wild article, it is bound to rise again to a point which will admit of its collection on a profitable basis.

Dr. Muller Holds a Farewell Reception.

DR. LAURO MULLER, Brazilian Minister of Foreign Affairs, and special envoy to this country, sailed for home on the 16th of July on the Brazilian warship "Minas Geraes." A few days before his departure—on Friday, July 11—he tendered a reception on this warship, which was then anchored in the North River at the foot of 79th street, New York, to the officers and representatives of the various official, civic and commercial organizations whose hospitality had kept the ambassador so extremely busy during the four weeks of his visit. About six hundred invitations were extended, including some to people not connected with official or civic bodies but personally interested in Brazil and the development of her vast resources. Among these invitations was one to the editor of THE INDIA RUBBER WORLD, who spent some months last winter in the great South American Republic, and who had the honor at that time of meeting the eminent Brazilian secretary.



THE BRAZILIAN WARSHIP "MINAS GERAES."

The reception was held from 5 till 7 o'clock, and the launches of the worship were kept constantly plying to and from the pier, bringing the coming and returning the departing guests. The ship itself was an extremely attractive spectacle, being decorated from stem to stern with the flags of all nations, but particularly with a great number of American and Brazilian flags, which practically formed a canopy over the deck. The band of the "Minas Geraes" proved adept in American music—not to mention a variety of "tango" and "turkey-trot" pieces; which by no means went to waste, as at least two hundred couples took part in the dancing on the deck, which continued through the greater part of the reception. The young Brazilian officers, by the way, showed themselves quite as clever at these dances as the American girls who acted as their partners. They could dance together even if they could not converse together, for very few of the younger officers knew much English, and not many New York girls are very deeply versed in Spanish or Portuguese. But this lack of a common linguistic ground was merely an incident and did not interfere at all with the general enjoyment of the occasion.

Among those present were Major General Thomas Barry, commander of Governor's Island; Captain Gleaves, of the Navy Yard; Captains Smith and Rodeman, of the American dreadnaughts "Arkansas" and "Delaware," which acted as convoys for the "Minas Geraes"; Ambassador De Gama; Lewis Nixon, Charles M. Schwab, and many other representatives of American industries particularly related to matters in Brazil. It might be said in passing, that the refreshments, including wines and cigars, were supplied on a lavish scale, and were enjoyed with hearty American appreciation.

Dr. Müller paid a very graceful tribute to American hospitality in the following words: "I came to America to pay off a debt, but I find I will leave it owing a still greater one. The people here are most cordial, in spite of their industrial energy. In fact, I think the United States a great nation. I regard your country as a world within a world. Your progress has been wonderful in commerce and everything else as well. I am delighted with this event." He gave further expression to this feeling of pleasure

over his treatment at American hands in an official letter which he sent to Secretary Bryan on the day of his departure.

It might be added that the "Minas Geraes," the latest addition to the Brazilian navy, is a first-class battleship of 21,000 tons, with a speed of over twenty-one knots. It has 100 officers and 900 men and marines. It carries twelve 12-inch guns and twenty-two 4.7-inch guns, and is altogether a ship of which any navy might well be proud.

THE PARA RUBBER CONGRESS AND EXHIBITION.

THE program drawn up by the organizing committee enumerates the following subjects for discussion at the Rubber Congress to meet at Pará, August 15, on the invitation of the Commission of Economical Defence of Amazonia:

SUBJECTS FOR DISCUSSION AT CONGRESS.

I. Old and new methods of extracting and preparing rubber.
II. Measures against adulteration and abuses.
III. Measures for improving the situation of the *Seringueros*.
IV. Reorganization of the commerce in rubber.
V. Organization of the agricultural industry of rubber.
VI. The cultivation of cacao.
VII. Other cultures to be recommended.
VIII. Stock-raising industry.
IX. Instruction in agriculture and stock-raising.
X. Colonization.
XI. Economical and commercial defence.
XII. Manufacturing industries. Do our economical and social conditions allow of their advantageous organization and maintenance? Development of indigenous raw materials.

RUBBER EXHIBITION.

The exhibition to be held at the same time will be divided into the following groups: A—Botanical; B—Technical; C—Commercial; D—Economical and Social; E—Agricultural.

GROUP B is divided into four sections and nine classes, as follows:

SECTION I. EXTRACTION OF LATEX.

Class 1. Processes now in use. Implements. Trunks of rubber trees cut with the *machadinho*. Drawings and photographs.
Class 2. Improved instruments invented in Brazil. Trunks or photographs showing their operation.
Class 3. Instruments used in the East and their application.
Class 4. *Tigellinhas* and other vessels for collecting and holding latex. Ingredients for the preservation of latex in a liquid state.

SECTION II. METHODS OF PREPARING HEVEA RUBBER.

Class 5. Smoking and its adjuncts, old and new.
Class 6. Appliances for smoking in sheets.
Class 7. Other methods of preparation.

SECTION III. CAUCHO.

Class 8. Methods of extracting and preparing caucho.

SECTION IV. MURUPITA.

Class 9. Methods of extracting and preparing the latex of "Murupita."

GROUP C has the following sub-divisions:

Class 1. Types of rubber now on the market.
Class 2. Present mode of treatment and samples of rubber prepared by any process.
Class 3. New types of rubber to be introduced in commerce.
Class 4. Preparation and packing of rubber for export; types of cases, bales, etc.
Class 5. Diagrams and statistical tables.

GROUP D includes maps and plans illustrative of the rubber industry from an economical standpoint.

GROUP E includes plans and photographs relating to the agricultural phase of the subject.

Such are the principal features of the proposed congress and of the exhibition in connection with same.

OFFICIAL PROGRAM.

According to the official program, just to hand, the congress will be formally opened on August 15, and closed on August 24; this arrangement leaving eight days clear for discussing the subjects to be presented.

The officials of the Congress will be formally elected at the preparatory session of August 15; while the Exhibition will be open from the 15th to the 24th. During the time of the Exhibition and the Congress, papers of an economic or scientific character will be read by experts on the subjects named in the above schedule.

On certain days, excursions will take place to various points of interest; such as: Mojú Rubber Plantation and Improvement Co., Ltd.; Museu Goeldi; the Pará Experimental Station, and the Agricultural Institute of Santo Antonio.

Meetings of the Congress will be held from 7:30 to 10 p. m. Each speaker will be entitled to 20 minutes for his address, with privilege of the same length of time for his reply to any criticisms.

In the July issue of THE INDIA RUBBER WORLD, on page 514, particulars were given as to the composition of the Organizing Committee and other points of interest regarding the Congress and Exhibition.

A BRAZILIAN CONSUL GIVES ADVICE ON GETTING TRADE.

Consul General Julius G. Lay, stationed at Rio de Janeiro, contributed to the June 26 number of the "Daily Consular and Trade Reports" a valuable article entitled "Imports into Brazil for Last Year." It will be well worth the while of any manufacturer wishing to establish trade connections with Brazil to get this number and read the consul's report. There is one particularly interesting paragraph, with the caption "How to increase American trade," and which reads as follows:

"The only way to get business in this country is to get after it, and when it pays, establish a branch and not depend on European commission houses here just because they are willing to pay cash in advance. These houses have already more lines of goods than they can handle properly, and in the majority of cases cannot possibly secure the amount of business that this important field offers. The trade in very few articles justifies the large expenditure of sending a capable representative to Brazil and Argentina even to remain long enough to establish selling connections, and in still fewer articles will it justify establishing branches in these expensive countries, but often concerns making non-competitive but allied lines can jointly afford the expense of a traveler. If it can be avoided, agency arrangements should not be brought about by correspondence."

PLANTATION REQUIREMENTS.

Under Number 11,111 the Bureau of Foreign and Domestic Commerce, Washington, reports an inquiry received by an American consulate from a foreign business firm for plantation requirements. This firm wishes to deal with American manufacturers, if their prices and goods compare favorably with those of European makers. The principal articles required are machinery for dessicating factories, rubber machinery, pumps, steel wire rope, lubricating oil, motor cars and appliances, steel plates and sheets, pig iron, etc. Prices to include cost, with freight and insurance to foreign port.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

RUBBER AT THE GHENT EXHIBITION.

IT will be recalled that a "Universal Exhibition" is now open at Ghent, with the object of concentrating displays of Belgian and other products. A prominent section is the "Colonial Exhibition," representing the varied exports of the Belgian colonies. Of these rubber forms one of the most salient features, coming under the heading of "Colonial Cultures."

The arrangements of the rubber section have been under the skilled direction of the "Association des Planteurs de Caoutchouc" or "Rubber Planters Association," the headquarters of which are in Antwerp, and which has been one of the most important factors in the development of rubber cultivation by the aid of Belgian capital.

At the head of the Committee of Patronage is M. Jules Renkin, the Belgian Colonial Minister, the other members of the committee being leading government officials. The

LOT OF RUBBER EXHIBITED BY THE SOCIETE FINANCIERE DES CAOUTCHOUCS.

corresponding technical members of this committee include M. Auguste Chevalier, of Paris, Professor D. O. Warburg, of Berlin, and Professor W. Dunstan, Director of the Imperial Institute, London.

In addition to the Committee of Patronage, there is a working committee, under the presidency of M. Ed. Bunge, of Antwerp, president of the Federated Malay States Rubber Co., Limited. Among the vice-presidents are MM. Paul Osterrieth and Emil Grisar, of Antwerp; while the body of the committee includes Dr. E. de Wildemann, of Brussels; MM. Alfred Grisar and Léon Osterrieth, of Antwerp; Dr. W. R. Tromp de Haas, of Java, and Mr. Herbert Wright, of London.

The Editorial Committee numbers among its members M. Emil Grisar, of Antwerp, and Dr. E. de Wildemann, of Brussels, the secretary being M. Jules Tilmant, of Antwerp.

The subject of "Colonial Cultures" has received full attention from these prominent technical and commercial authorities on rubber. It had been confided to them by the Belgian Colonial Minister, with the co-operation of M. E. Leplae, director general of agriculture for the African colonies of Belgium. The actual carrying out of the preparatory arrangements was undertaken by a special committee, which included M. Robert de Decker, M. R. Ehrhardt and M. Léon Osterrieth. The services of the last named gentleman largely contributed to the successful display made by the association at London in 1911.

The May and June issues of the "Bulletin" of the association deal with the general features of the exhibition. These include the compilation of a "History of Rubber," in which its later developments are touched upon, in addition to its earlier features. Tapping and coagulation are then dealt with, as well as rubber in its finished condition. The various subjects are illustrated by specimens and photographs grouped in the various sections of the "Rubber Museum," which constitutes a leading feature of the exhibition. A neat folder accompanies the May issue of the "Bulletin," with several cuts illustrating, amongst other subjects, "Clearing on a Katanga farm," and "Rubber plants from Elizabethville (Katanga)."

While the subject of rubber cultivation is thus fully represented by the exhibits, special interest attaches to those dealing with rubber in its complete form. The Société Financière des Caoutchoucs has an effective display of the grades made by the companies it controls. One lot of exhibits is reproduced by annexed illustration. An interesting feature is a collective display of the various grades of rubber handled on the market of Antwerp.

With over 1,000 exhibits, it cannot be questioned that the rubber section at Ghent has done full justice to the subjects with which it has been called on to deal.

That the organizers of the exhibition appreciate the importance of the subjects handled may be seen by the subjoined extract from the "History of Rubber," already referred to.

"Modern life without rubber cannot be imagined. It is the necessary associate of copper in all the electrical industries—telegraphs—telephones—lighting. Rubber is the creator of the cycle and of the automobile, for which it is indispensable. . . . The astonished mind asks—not what rubber is used for, but rather, what are the purposes for which it is not employed?"

COLONIAL CONGRESS AT GHENT.

The program has been issued of an International Colonial Congress to be held from August 24 to 28 at the Ghent Universal Exhibition. Among the papers to be read are the following:

Regulations to be applied to vines. Dr. E. de Wildemann, of Brussels.

The cultivation of rubber in the Belgian Congo. M. Gisseleire, Minister of the Belgian Colonies.

RUBBER EXPORTS FROM THE FEDERATED MALAY STATES.

According to information cabled by the Federated Malay States Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of June amounted to 4,491,200 pounds, as compared with 2,744,000 pounds in May, making the total for the six months of the present year 23,492,129 pounds, as compared with 15,382,265 pounds last year.

Appended are the comparative statistics for 1911 and 1912:

	1911.	1912.	1913.
January .....*pounds*	1,329,170	2,730,576	4,787,280
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
Total	8,349,397	15,382,265	23,492,129

LAMP BLACK AND CARBON BLACK.

THE valuable and interesting paper read by Mr. Godfrey L. Cabot, of Boston, at the recent New York Congress of Applied Chemistry, on the subject of "Lamp Black and Carbon Black," deals with the question under its technical and industrial aspects.

According to the definition in Webster's dictionary, lamp black is the fine impalpable soot obtained from the smoke of carbonaceous substances only partly burnt. This definition is correct from the chemist's point of view, covering also the substance known to the trade in this country and elsewhere as "carbon black." In his title Mr. Cabot has used both names, because in the American trade the term "lamp black" is usually understood to be a soot deposited by the smudge process and made from oil, resin, or some other solid or liquid raw material. "Carbon black," on the other hand, is the term applied to a black deposited by actual contact of a flame upon a metallic surface.

LAMP BLACK.

Using the term "lamp black" in its wider sense, as embracing any commercial form of soot, it may be prepared in three different ways—first, by the combustion of dead oil of tar, pitch, resin or some other carbonaceous raw material with an inadequate supply of air, and the collection of the floating particles of soot which escape unburned from the flame and slowly deposit themselves on the walls and floors of the collecting chambers; or second, it may be formed by the direct impact of a flame upon a collecting surface; and third, it may be formed by heating carbonaceous vapors to a decomposing point, apart from the air or flame.

Soot has ceased to be used for its former purposes, its composition of 50 per cent. of grit, empyreumatic matter and other impurities rendering it unsuitable.

Considering "lamp black" in its more restricted sense of a commercial soot, deposited by the smudge process from various dead oils, from 15 to 35 per cent. of its weight can be obtained in the form of lamp black by deposition in suitably arranged chambers.

The quality of the black is determined by the size and shape of the furnaces in which the oil is burned, by the heat to which it is subjected and other attendant circumstances. It has been found that the best grades of black, generally speaking, are obtained in furnaces of moderate size.

Mechanical devices have been used for churning the air, and causing the condensation of the smoke in masses sufficiently large for it to deposit itself.

Resin, resinous woods, tar, pitch and other raw materials are to a certain extent used in the manufacture of lamp black, but the quality is greatly inferior to that obtained from the dead oil of tar and other substances.

Still another source of lamp black is acetylene gas, obtained from the refuse of carbide of calcium factories. This process is very hard on the apparatus, the black produced being very inferior in color and strength to that obtained from natural gas. The irregularity of its supply and price limits its use to cases where its bluish tinge obtains for it a preference in certain trades.

CARBON BLACK.

Carbon black, as already remarked, is the trade name given in this country, and to a certain extent abroad, to lamp black made upon the surfaces of metal or stone by direct impact of flame. The first carbon black produced in this country and sold commercially was made in 1864 by J. K. Wright, an ink maker of Philadelphia, for use in printing ink. This industry is thus a comparatively new one in this country. Mr. Wright made black on sheet iron cylinders, revolved over gas jets, from which the black was removed by stationary scrapers.

The first process of commercial importance patented was that of John Howarth, who received in September, 1872, a patent for the manufacture of carbon black from natural carbureted hydrogen gas. Owing to the cheapness of the raw material, as compared with the artificial gas previously employed, the price gradually dropped from $5 to $1.25 per pound.

Mr. Howarth worked his patents with success at New Cumberland, West Virginia, and later at Saxonburg, Pennsylvania. Owing to his superior ability, Mr. A. V. Nolan, who had started a competing factory at West Cumberland, West Virginia, bought out the original company. In 1883, L. Martin & Co., of Philadelphia, became interested in a plant at Foster's Mills, Pennsylvania.

A factory was started by Samuel Cabot about the same time at the village of Worthington, Pennsylvania, where efforts were made to confine and economize the gas. Owing, however, to the inefficiency of the foreman, the plant remained to a great extent fruitless for some years.

The Grantsville, West Virginia, works of Samuel Cabot now produce about 10,000 pounds of black a day, and are operated by five gas engines. This is said to be the largest factory in existence. The leading position of this factory was largely due to the system it had introduced of 24 inch plates, with a rotating burner and a black box radially placed.

In 1883 E. R. Bland, of Warren, Pennsylvania, began making black on the roller principle, the details of manufacture being subsequently improved by his son's processes, until the black has been shown to possess some valuable qualities, and is very profitable to its owners—the Peerless Carbon Black Co., of Pittsburgh. This company was for many years the only one in this country making carbon black from natural gas, but there are now three such factories.

In the decade 1883-1892 the process of making carbon black introduced by Mr. A. R. Bland, became the most important as to output and total value of black produced. The prices of black rapidly fell, reaching 7 cents per pound in 1887 and 4 cents in 1889. They then considerably improved, the total output at the close of 1902 reaching about 10,000 pounds a day, worth at that time on the average about 6 cents per pound.

TOTAL PRODUCTION.

The total value of the carbon black made in a year would, it is said, represent about one million dollars, while the total value of the world's output of lamp black would probably be two or three times as much. Yet the real importance of these two commodities to humanity is inadequately represented by these figures. These articles form the basis of black printing inks, are largely used in black paints and for coloring rubber, leather and other substances. Each has its distinct uses; carbon black being preferred for black ink, stove polish and vulcanized rubber. Lamp black is much better for coloring oilcloth, leather and certain forms of rubber, being much more widely used in paint than carbon black.

Within the last ten years the Pennsylvania factories (with three unimportant exceptions) have all been moved to West Virginia.

The total value of United States imports of carbon black, gas black and lamp black were: 1908, $493,907; 1909, $514,951; 1910, $679,607; 1911, $640,911; 1912, $907,623.

Such are a few of the points brought out by Mr. Cabot in his interesting paper.

FRENCH EXPORTS OF RUBBER GOODS TO UNITED STATES.

In a recently issued report, Consul General Frank H. Mason, of Paris, calls attention to the increased exports to the United States of rubber goods from his district. The figures were: 1911, $272,836; 1912, $474,850.

Notes on the Acclimatization and Cultivation of the Guayule

(Parthenium Argentatum Gray.)

By Francis E. Lloyd, MacDonald Professor of Botany, McGill University, Montreal, Canada.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

SINCE the time when, as a result of the then probable prejudice to the natural supply of guayule shrub, the problem of its cultivation was attacked, the question as to: What changes in the responses of the plant might be expected on the increase of water supply—has been uppermost. An answer has been obtained as yet only in general terms, and, from the practical point of view of the guayule rubber manufacturer, it is less satisfactory than from that of the plant physiologist. Indeed, in searching for a complete answer, the time element is so great that a number of years is required for working out satisfactory data. Those available to the present writer have been obtained from plants

PROFESSOR FRANCIS E. LLOYD.

grown for two seasons at Cedros, Zacatecas, Mexico; for three seasons at Tucson, Arizona, from material derived from Cedros, and from the Stockton plateau, Texas; from a single plant grown by Dr. H. H. York, at Austin, Texas, also from Stockton plateau material. At Auburn, Alabama, plants have been grown both in the open and in the glasshouse, both from Cedros seed and from Texas stocks, for three years. Seedlings two years old, grown in Tucson, have also been available.

The information based upon the above material will be briefly presented in what follows. The situations indicated include the semi-arid Chihuahuan and Sonoran deserts—within the former of which the guayule has its natural habitat—the moister climate of Eastern Texas, and the relatively wet region of middle Eastern Alabama, which has a rainfall of 45 to 55 inches. Before contrasting the plants from these widely different places we may profitably compare those growing naturally within the proper area of distribution. It has already been shown* that the guayule is by no means uniform in structure within this area, the differences being such as may be referred to differences in the amount of available moisture, which may in turn be attributable either to greater rainfall or to the character of the soil, chiefly mechanical. The structural differences referred to are those of relative thickness of the "bark," or, more properly speaking, the cortex, these being such that, the greater the available water, the relatively thinner the cortex.

Correlated differences in the length of the annual accretions of stem are to be noted. The more rapidly grown stems display a greater tendency to obvious shrinkage of the cortex, so that, in place of the rounded surfaces of the slowly-grown stem, longitudinal corrugations are to be seen. I am creditably informed that such characters are displayed by the guayule from the easternmost region of its distribution area, in the State of Nuevo Leon, to an extent so marked that the practical extraction of crude rubber is reduced, roughly speaking, to about 4 to 5 per cent. on mill weight. This may not necessarily be taken to mean that the amount of rubber relative to the volume of the rubber-bearing tissues is less than elsewhere, but that the volume of woody tissues (wood, hard bast, etc.) is greater. Nevertheless, this may be the case, and I know of no studies which have been made to settle the point. But, in the light of what we do know about the relation of water supply to the amount of rubber secreted, it is not improbable that the actual intracellular secretion in these Nuevo Leon plants is somewhat less than in dryer regions.

The well-known habital differences between the so-called *"macho"* and *"embra"* guayule furnish another case in point. *Macho* guayule is sparingly branched, has thick "bark," and the younger branches shrink little on drying, and, at all events, do not show longitudinal wrinkles. *Embra*, on the other hand, is very much branched, the younger twigs become furrowed on drying, and the bark is relatively thin. In the former the flowering shoots are sharply delimited from the leafy shoots; in the latter, the *embra* guayule, they are not. Whether these two types represent racial differences or not I do not care to discuss here, but it is well known in Mexico that, from the practical point of view, the distinction is important, as *macho* guayule is considered distinctly better as regards rubber content. Since both types may be found associated in the same locality it seems improbable that the intracellular secretion is unequal in them, but that the inferiority of the *embra* is due to the greater relative volume of the woody cylinder, and the relatively greater number of smaller branches. It is significant that when guayule of any type is put under cultural conditions, and supplied with abundance of water, the habit of the plant swings away from the *macho* toward the *embra* type of growth, in that there is a tendency for the leafy shoots to run out into flower stalks, and toward the greater development of wood.

These tendencies are to be seen whether the plant is grown in the desert under irrigation or in regions of higher rainfall, and are a summation of differences in minor details which I have treated more fully elsewhere. Of these I need mention but one, and that, in general terms, to the effect that the greater the water supply, up to the limits thus far observed, the greater the rubber-barren, fibrous or woody tissues in volume and in hardness, the greater the irregularity of growth, and the larger the number of smaller twigs and of leaves. This condition is one which presents difficulties to the manufacturer of guayule rubber due to the greater relative volume of the bagasse, and this will obtain wherever the plant may be grown with an abundant water supply. In speaking of acclimatization, therefore, we may avoid, for the purpose of this paper, further description of the tissue development. It will suffice to confine attention to the rate of growth, tenure of life and the total amount and rate of rubber secretion.

TENURE OF LIFE.

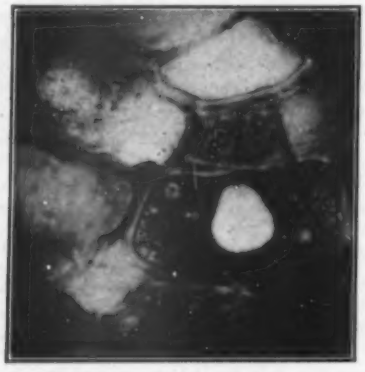
When a plant is removed from its own to another habitat, the

*Publication 139, Carnegie Institution of Washington.

new combinations of environmental factors may prove fatal, whereas any one factor, taken in different combination, might not. So it comes about that the guayule can withstand a greater cold much more effectually under arid than under moist conditions. Of a lot of guayule plant grown outdoors at Auburn, Ala., both from seed and from stocks, in 1910, only one in 25 was living in 1912. In no case did death overtake them in the warmer periods, nor early in the winter, but rather late in winter during a cold snap following heavy precipitation. The evidence that the winter of Alabama offers untoward conditions is clear, however, before the plant is killed—it has a bad color, and a generally disheveled look, due to the numerous dead unshed leaves. The wet and cold weather conjoined constitute the limiting factor. This may be taken to mean saturated soil and a minimum temperature of 10 degs. Fahr., approximately that of the normal habitat. The part immediately affected appears to be the root, the cortex of which quickly disintegrates.

The tenure of life in a new habitat depends further upon the ability of the plant to resist new enemies. In Alabama, thrips and nematodes have been seen to affect the guayule badly. A strong tendency to form large and irregular lenticels on the lower portions of the plant in contact with the soil and nearby above its surface may be due to this proximity alone or to insect stimulation. The seed is poorly developed.

In the semi-arid desert, on the contrary, no case of death has been noted during three years, save as the result of insufficient irrigation. It is clear from this behavior that the resistance of an irrigated plant to drought is much less effective than that of



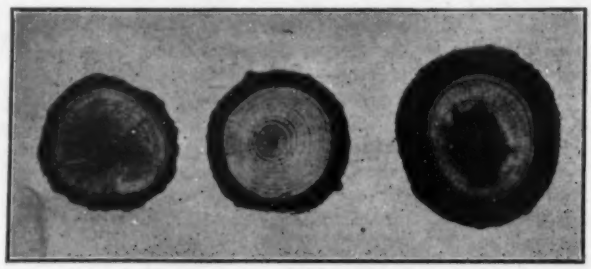
TYPICAL CELL FROM BARK; RUBBER FOAMY IN APPEARANCE, FILLING THE CELL.

one grown under the usual conditions. Though attacked by a fungous parasite, it has never been known to be seriously affected. The development of seed is abundant, and it has a vitality approximately equal to that of field plants.

RATE OF GROWTH.

When grown under irrigation in the semi-arid desert plants from transplanted stocks have attained in two seasons a maximum weight of 4.5 pounds, 3.5 pounds being a good-sized plant. These were a meter and over in diameter. The average weight for such plants would probably be 2 pounds. The dry weight of such plants, by which the rubber content must be calculated, is about 30 per cent. of the fresh weight. Allowing, therefore, a dry weight per plant of one pound, a not too conservative estimate, and assuming 10,000 plants to the acre, a 2 per cent. rubber content would yield 200 pounds of rubber in two growth seasons, followed by, say, six months of suppressed irrigation. At 60 cents per pound we have a return of $120 per acre for two years, or $60 per acre per year, against which should be charged, in addition to the usual costs, that of obtaining plants from seed for planting the ground. There is no evidence forthcoming that the percentage of rubber is greater, under the above-described conditions, than about 2 to 4 per cent. Assuming it, however, to be 6 to 7 per cent., guayule would even then scarcely be able to compete with onions in irrigated land.

The assumption is made that it would not pay to grow the plants longer than two years. In what follows under the head of rate of rubber secretion the reason for this will be seen in part. As to the rate of growth merely it may be said that the



STEM OF GOOD FIELD GUAYULE FROM ZACATECAS. STEM OF GUAYULE FROM ISIDRO, CHIHUAHUA. IRRIGATED GUAYULE FROM ZACATECAS.

[Same amount of wood in each stem.]

rate of increase of weight will be found to drop off rapidly after the second season's growth, to which must be added the fact that the smaller and therefore younger twigs contribute little to the accumulation of rubber. The rapid production of cork characteristic of the irrigated plant, results, it is probable, in the destruction of rubber. I find that the rubber in the cells which are active in giving off the innermost and therefore younger cork cells becomes broken up into small globules, and these disappear before the cork cell in which they are found gets very old. The cork as a whole appears, as a result, to be devoid of rubber, although in point of fact minute quantities are present in the cells referred to. It is practically impossible to measure this loss directly, but it may very well offset the further gain by growth quite materially. The death of various twigs and branches due to competition *inter se* must also contribute to loss of rubber. These circumstances, coupled with the reduction of the growth rate after the second season, indicate the economic maximum to have been reached.

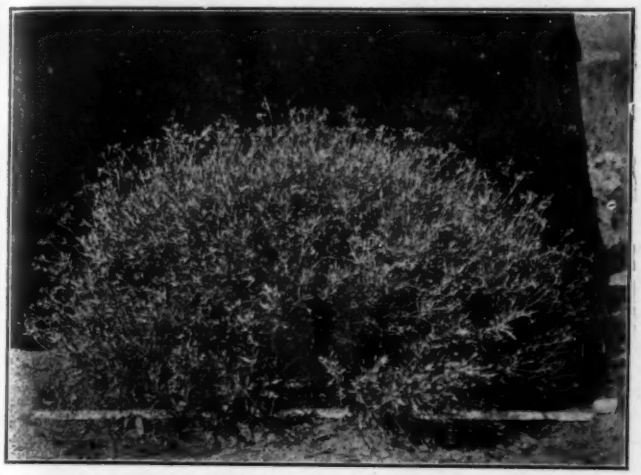
In the moister climate of Auburn, Alabama, one suitable, as everyone knows, to the development of cotton, the rate of growth is less rapid than in the desert under irrigation. In the first season, a height of 8 to 10 inches is attained, but in the second season the additional growth is meagre. This fact, coupled with the uncertain tenure of life during the winter, would force the issue of considering the rubber secretion of the first season alone. This, as we shall see, is practically nil. It must be concluded that the possibility of growing guayule in this region is excluded by its abnormal development and slow growth, quite aside from other considerations. I do not raise the question of the character of the soil and its possible causal relation to the manner of growth, beyond saying that it is not related, it would seem, to the lime content, since the plant grown in the limestone soil of Austin, Texas, behaved in a very similar manner.

RATE AND CHARACTER OF RUBBER SECRETION.

Normal field plants. In the study of the rate and character of rubber secretion in experimental plants, the field plant has always been taken as a standard. The method, that of microscopic observation, does not enable one to state the results in terms of percentage relative to the total weight of the plant. Only chemical methods can be used for this purpose. Nevertheless much useful information can be gained by means of the microscope, particularly in regard to the method of secretion and the amount of rubber within the cells which secrete it.

METHOD OF SECRETION.

The first evidence of secretion is seen in the occurrence of very minute granules in the protoplasm. With the increase in their number and size they migrate into the sap-vacuole, and can be seen there by their Brownian movements. The analogy of this condition with that in the latex vessels of latex rubber plants is obvious, and indeed there may be more than mere analogy. In the definitive condition the rubber takes the form of a large droplet, almost filling the sap-vacuole, and rendered heterogeneous in its internal structure by the inclusion of encystments of solutions containing, probably, albuminous, carbohydrate and hydrocarbon



TWO SEASONS' GROWTH FROM STOCK UNDER IRRIGATION, ZACATECAS.

substances. It is important to note here that the rupture of the wall separating two adjoining cells would be followed by the contact and merging of the two contained rubber droplets. This is the more sure result, the larger the droplets, and this explains the ready agglomeration of guayule rubber into "worm rubber" in the pebble mill when field plants rich in rubber are used. Conversely, the smaller the droplets, the more increasingly difficult is the same result, calling for special methods of treatment. The droplets can be so small as to be impossible of mechanical extraction in the usual sense; this happens when they are so small as to form a suspension. The agglomeration of the suspensoids might be possible by the use of a minimum of water and the action of a "coagulating" agent, involving technical difficulties, the overcoming of which would be of the highest interest, but probably not economically of importance in this special case.

The largest rubber content under irrigation with known conditions was attained by plants of two seasons' growth in Zacatecas. At the close of the second season's growth the rubber content appeared as in the first stage of development, namely as minute droplets or granules. Seven months later, after practically continuous drought, the amount of rubber in the cell was less than the maximum, but not by more than, say, one-fifth. It occurred as a continuous mass, almost identical in appearance with the normal. In this case, the small percentage of rubber, on dry weight, is due in very large part to the great development of tissues which do not contain rubber in appreciable quantities. The use of abundant water in irrigation cannot be said to have inhibited the secretion of rubber, but rather to have increased the growth of barren tissues.

The problem from the economic viewpoint is, therefore, in such case not the possibility of extraction so much as the increased cost of handling a much greater volume of bagasse, though it is probable that this in itself would lend some hindrance to extraction.

The material grown at Tucson from stocks showed its rubber cells to contain a dense emulsion-like mass, filling the sap cavity in August of the third season's growth. In the previous August the same cells showed only minute granules. Seedlings in August of their second seasons contained in each cell an irregular solid mass of rubber occupying one-tenth to one-eighth of the sap-cavity, accompanied by quite small droplets elsewhere. As the irrigation had not been controlled or definitely applied and suspended, it is probable that the conditions had not been the best possible for the secretion of rubber.

Practically the same result was obtained for plants grown from stocks at Auburn when examined early in September (1912) in their third season. If we compare these cases from Alabama and from Arizona with the mariola (*Parthenium incanum*) we find but little difference between them, either as regards the amount of rubber in the cells or its character.

TWO SEASONS' GROWTH AT AUBURN (ALA.) FROM TEXAS STOCK.

The conclusion is inevitable, I believe, that the determining factor in the cultivation of the guayule is: control of the water supply. In the presence of an abundance of water applied irregularly and at too frequent intervals, it will require more than three years for the maximum cell content of rubber to be attained. A quantum approaching the maximum is reached, on the other hand, if plants which have been well irrigated for two seasons are then subjected to drought conditions for six to eight months. That merely rate of growth is not correlated with the secretion of rubber is shown by the condition found in a plant grown from seed in a 12-inch pot in limestone soil for two years, and planted out for a season (summer of 1912) at Auburn. These plants were in some cases at a standstill for a year previous to planting out, and for various reasons grew but little in the open.

BEST TYPE OF FIELD GUAYULE.

In all the specimens examined, the rubber was in the form of a dense suspension, and had not formed a solid mass.

TO PREVENT THEFTS OF EXTRA TIRES.

The number of people who would like to help themselves to another man's automobile when they see it left unprotected in the street is unfortunately very large; and the number of those who, while they would hardly care to run the risk of taking the whole machine, are quite willing to run the risk of taking any movable part of it, is still larger. The extra tire which most motorists carry with them is particularly attractive to the motor sneak thief, and many tires have been lost in this way. The American Chain Co., of Sherrill, New York, has put on the market a chain made of flat links covered with duck or leather, that, with the help of a padlock, secures the extra tire to the running board or to some other part of the car.

AN OLD INNER TUBE AS A LIFE PRESERVER.

A correspondent writing to one of the popular magazines describes an inexpensive life preserver that he has devised. He has taken a discarded inner tube and cut it to the proper length. to fit around his body under the shoulders, leaving a sufficient length so that the two ends can be joined. This he accomplishes by sandpapering the outside of one end and the inside of the other, inserting the smaller in the larger, and fastening together by rubber cement. He finds that this improvised preserver will hold the weight of any ordinary man.

This home-made life preserver will undoubtedly work well, provided the joint is secure, but it would be rather unfortunate to have it in operation in deep water on a non-swimmer and have the joint separate.

PROOFERS WANT PROTECTION AGAINST DISHONEST PRACTICES.

WE print below a letter received from a proofing company, which seems to indicate that this particular company has had some unfortunate experiences with certain raincoat manufacturers. If many of the proofers have had similar experiences, it would seem to be wise for them to follow out the suggestion made in this letter and to confer as to the best means of protecting themselves from any manufacturer who might be given to the sharp practices described.

Mr. Pearson, Editor,
INDIA RUBBER WORLD, New York City.
Dear Sir:

Having heard of you as being at all times interested in using your influence and prestige in doing good for the various branches of the rubber trades, we wish to acquaint you with some of the abuses of the raincoat proofing trade, and ask your assistance in getting the various proofers to meet in a convention and agree to rules to eliminate such abuses.

Raincoat manufacturers ship converted cloths to proofers to rubberize or waterproof, and we reliable proofers use a compound that we guarantee waterproof and warrant against decomposing or becoming hard or soft within six months after proofing; but a certain percentage of the raincoat manufacturers are unscrupulous and there have been proven instances where a raincoat manufacturer has purposely kept his goods in conditions that are destructive to rubber and then has returned such made-up coats to the proofer charging him a higher price per coat than he sells for to the trade —and the proofer, fearing to let the case go to court, with all the uncertainty involved, will very often deem it the wiser course to allow these charges, extortionate though they may be, in order to avoid a law suit, though in paying these charges the profit of an entire season may be wiped out.

We issue with our acceptance of orders a provision, in the shape of a printed form, which describes very thoroughly the proper handling of waterproof material in order to prevent any subsequent damage; but this is no protection against the dishonest manufacturer who takes advantage of the keen competition among the proofers in order to make the proofer the scape-goat for any loss that should fall upon him by reason of having bought poor cloth in the first instance, or by reason of mistakes in his work shop, or lack of proper care in stocking and handling after his goods are made up.

These are but a few of the abuses which the proofing trade is called upon to endure at the hands of an unscrupulous manufacturer, but they could be eliminated if all the proofers were to get together and agree on uniform conditions and rules under which they would allow claims for any defects for which they are responsible, but would refuse to allow any claims obviously dishonest in their character.

Very sincerely yours,

FAIR PLAY.

BOOKLET OF THE COTTICA RUBBER AND COFFEE CORPORATION.

The Cottica Rubber and Coffee Corporation, incorporated under the laws of the State of New York, with headquarters in Buffalo, has just issued a booklet of 32 pages describing the purpose of the company, which is "to obtain and develop plantation estates in Surinam (otherwise known as Dutch Guiana), the principal object being the planting of rubber trees (*Hevea Brasiliensis*), coffee and cacao trees, bananas and various catch crops, such as corn; also the carrying on of this business in all its branches from planting to gathering and marketing all of its products."

The little booklet is generously illustrated and contains a good deal of interesting information, whether one is anxious to invest in rubber plantations or not. Incidentally, it quotes quite freely from letters by Mr. Pearson which appear in THE INDIA RUBBER WORLD of the first five months of 1911, in which he described Dutch Guiana, where the company's plantations are located. The company is capitalized at $250,000, divided into 50,000 shares of $5 each, and this little pamphlet is intended to convince the reader that it is to his interest to own some shares.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

THE Boston market is in its usual midsummer condition. Some branches are above normal, while others are simply holding their own. The makers of automobile tires continue to report good business, and most, if not all, are prospering. Despite the fact that many concerns have increased their output, there seems to be no great accumulation of tires in the factories or salesrooms. The druggists' goods business seems to be affected somewhat by the large consolidated interests in the retail drug trade. Those corporations which run chains of stores have formed a habit of advertising fountain syringes, hot water bags and similar lines at remarkable cuts from the usual drug store prices, with the result that while these corporations are large buyers, the smaller stores suffer, and jobbers find their sales of these goods falling far below normal. As the large buyers are probably enabled to secure as good as, or even better terms than the jobbers, the result must be a falling off in the total demand, unless these buyers purchase as much more in the aggregate as the orders from jobbers fall short.

* * *

The clothing trade continues prosperous, with a demand which keeps the factories busy. Few mills making these goods are willing to extend vacations for longer periods than the usual two weeks. Mechanical concerns have had a good trade in hose, which, however, is now falling off, while the call for belting and packing is rather unsatisfactory. There is but little doing in the boot and shoe business, and many of the factories have shut down for a longer or shorter term during the month just closed.

* * *

During the early part of the month, while the shoe buyers were in Boston, according to their semi-annual custom, the selling agencies of the United States Rubber Co. were well represented in this city. W. H. Jones, Southern selling agent, of Baltimore; Richard C. Hall, Western selling agent, and A. F. Solberg, of Chicago; Wm. E. Barker, manager of sales, of New York, and Homer E. Sawyer, general manager, were —for different periods of time—at the Boston office. The selling agents are here not so much for the purpose of selling goods as to meet their customers, who come here at this time to purchase leather goods.

* * *

Will we ever hear the last of that case against Warren B. Wheeler, Stillman Shaw and G. Alden Whittemore? They have been indicted again in connection with the sale of stock of the North American Rubber Co., makers of synthetic (?) rubber, and are now claiming irregularity in the proceedings, contending that, by reason of their books being seized before the grand jury proceedings were started, they were forced to give testimony which was later used against them; while Whittemore further claims immunity on the ground that when he testified before the grand jury he was not informed that his testimony might be used against him. At present writing, Judge Dodge, of the United States District Court, before whom the hearing was held, has not rendered any decision.

* * *

Improvement is the order of the day at the B. & R. Rubber Co.'s factory at North Brookfield, where a fine new engine has just been installed, in place of the old Brown engine of ancient type which has done excellent duty for many years. The company is prospering, and the town (which for some years went backward when the old Batcheller shoe business was discontinued) is now more flourishing and gives employment to more workmen than at any previous time in its more than two hundred years of existence.

* * *

A certificate of incorporation has been granted the Granite City Rubber Co., which will soon start manufacturing in the neighboring city of Quincy, where the two principal incorporators reside. W. A. Prince was until recently manager of the American Chemical Co., of Cambridge. George Reinhalter was an assistant in the chemical laboratory of the Hood Rubber Co. at East Watertown. The third incorporator is I. W. Pollard. It is an interesting fact that the two first named gentlemen began their business careers in the local drug store of C. C. Hearn, Quincy, an experience which not only led them into scientific experimental work, but also sealed a friendship and a mutuality of interests which have led to this union in a business enterprise.

* * *

The Aetna Rubber Co. is the style of a concern which was incorporated last month, with a capital stock of $2,500. The incorporators are Abe Kosow, Philip Samack and Samuel Goldstein.

* * *

A new industry somewhat allied with the rubber business is the Bay State Felt Co., which will soon start manufacturing at Westboro, Massachusetts. This is a new Massachusetts corporation, with a capital stock of $250,000. James Whitaker is president and Benjamin Kendrick treasurer.

* * *

The American Rubber Co.'s clothing department has been somewhat crippled the past month, through a strike of a few of the cutters. Business has been good right along, and the company has enough orders ahead to keep the factory running to full ticket—which was the intention until this trouble started. The management will, however, be likely to shut down for a few weeks if the strike assumes sufficiently large proportions to seriously interfere with the work.

* * *

The murder of one man, the wounding of another and the suicide of the murderer served to raise a portion of the Hood Rubber Co.'s employes to a high pitch of excitement one day last month. The aggressor, having been nagged by his fellow workers until his patience was exhausted, assailed his tormentors, then fled, and, being pursued, turned the pistol upon himself with fatal result.

* * *

The newspapers have just become cognizant of the fact that young Elisha S. Converse, son of Col. Harry E. Converse, and namesake and grandson of the late Deacon Converse, is working at the Edgeworth mill of the Boston Rubber Shoe Co. The fact has been blazoned forth under such scareheads as "Millionaire Converse Works at the Bench," "Rich Man's Son Now a Worker" and similar sensational titles. The report goes on to state that the young millionaire drives over from Brookline in his automobile, dons overalls and jumper at 7 a. m. and works until 5 p. m. in one of the hottest rooms of the factory, where the thermometer is never less than 100 degrees. "At present," this account says, "he is clipping red-hot heels from the furnaces (sic) to be placed on rubber boots. At 5 o'clock he enters his touring car, which awaits him at the factory entrance, and speeds to his home."

While this may seem somewhat marvelous to the average reader, it is nothing surprising to those who are familiar with the policy of the Boston Rubber Shoe Co. Many a man who afterwards became prominent in the rubber footwear business began learning the rudiments of the trade in that Edgeworth factory, or in the Fells factory of that company. General Manager Homer E. Sawyer served his apprenticeship making boots; some of the men now in the factory were his fellow workmen and today consider him a personal friend. There are other men in the United States Rubber Co.'s plant who can build a Boston short boot as well as any man now

in the place, while other graduates from that Edgeworth factory are holding various offices in the company.

Young Elisha Converse, grandson of Deacon Elisha S. Converse, founder of the Boston Rubber Shoe Co., and also grandson of Deacon John H. Parker, of leather sole rubber boot fame, is but working out the practical policy, long established, of learning the business "from the ground up," and the knowledge thus gained is likely to stand him in good stead when he is called higher in the interests of the business started so long ago by his distinguished and revered ancestor.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE large balloon "Goodyear," which has been given many trials in and about Akron during the last few months, was a winner in the National Race held July 4 from Kansas City, which makes it one of the contestants representing America in the International contest to be held in France in October. The "Goodyear" in its flight from Kansas City on the Fourth was in the air twenty hours and during that

THE "GOODYEAR" BALLOON AT KANSAS CITY.

time traveled approximately 650 miles. The landing was at West Branch, Michigan. The balloon was in charge of Ralph Upson, pilot, and R. A. D. Preston, aide. One severe storm was encountered, at 2 o'clock July 5, when passing the state line between Iowa and Illinois—a severe wind and rainstorm, which cooled the atmosphere materially, thus causing the gas in the immense bag to contract, thereby shortening the flight. Mr. Preston obtained many interesting views during his trip, several of which were taken above the clouds.

The Goodyear Tire and Rubber Co. is building another new branch, in Long Island City, New York, to be completed in about six weeks. It is located at the corner of Jackson avenue and Honeywell street and is to be four stories high, 275 feet long and 50 feet wide, equipped with a complete showroom, warehouse, wheel shop and general repair shop.

The Goodyear company is promoting a new system of advertising, whereby at a minimum cost dealers are supplied with signs which will advertise their local business and at the same time carry mention of the Goodyear company. This minimum cost is brought about by the purchasing of a great number of these signs and supplying them to the trade at less than purchase price.

The wireless apparatus of the Goodyear company's Detroit branch supplied the news to the steamer "City of Detroit," cruising from Detroit to Cleveland, on which the semi-annual meeting of the Society of Automobile Engineers was held. This apparatus, which has been in service over a year, was installed in order to gain quick and at all times efficient communication with the factory in Akron. During the recent flood, when all other lines of communication failed, the Goodyear home office was in close touch with the branch at Detroit, and during the terrific windstorm on the Lakes this tower was gratuitously offered to the D. & C. company, which was thus enabled to keep in connection with its boats.

A large number of Englishmen and members of the Society of Automobile Engineers made a trip from Cleveland to Akron to visit various rubber factories, having attended the semi-annual meeting of this society aboard the steamer "City of Detroit." The point that impressed the English visitors most was the idea of specializing, as being developed in the American tire factories.

E. R. Hall, chief of the experimental department of The Goodyear Tire and Rubber Co., says: "Several years ago America looked to Europe for ideas in not only structural tendencies in foreign motor cars, but also in tire designing. But now the tables are turned and it is safe to say that America is fully several years ahead. In this country we have special tires made for different classes of work; special tires for electrics and gasoline cars; special tires for trucks. The tires are being built more for the particular work they must do than formerly."

Storage room during business hours for the automobiles of the Goodyear company's officers and department heads is requiring more space as the capacity of the plant and the working force increase. The East Market street building, which has been occupied as a garage, is now found to be inadequate for this purpose, and another building of equal capacity is soon to be erected by the company.

* * *

The Firestone Tire and Rubber Co., which only recently took possession of a new addition to its already extensive plant, has started work on another new structure, a building permit having been granted for a four-story brick and steel factory building, to cost $90,000. The Firestone plant, which now covers fifteen acres and gives employment to more than 3,000 persons, is said to be the largest plant in the world devoting its energies exclusively to the manufacture of tires, the daily output of its finished product having been stated by a director of the company to be fifty tons. This enormous business was started about fifteen years ago, when H. S. Firestone, president of the company, commenced operations in a small way at Miller and Sweitzer streets, manufacturing "The Firestone Side-Wire Carriage Tire." With the growth of the enterprise, additions have been erected from time to time, each in its turn embodying all the latest ideas in sanitation, fire prevention, etc. It is aimed to complete this latest

structure about the time the president of the company, H. S. Firestone, returns from Europe. Mr. Firestone and his family are now enjoying a motor trip on the continent, their intention being to tour Italy, Switzerland, France and possibly Germany.

Robert E. Lee, former superintendent of the Cincinnati Traction Co. in Cincinnati, is now in the employ of The Firestone Tire and Rubber Co., at its home office.

Mr. A. G. Partridge, assistant sales manager, left Akron July 9 for a six weeks' trip to Northwestern Canada, Washington, Oregon and British Columbia. On this trip Mr. Partridge will visit 30 or 40 cities where the Firestone company is represented.

The "Panama-Pacific Road Race" from Los Angeles to Sacramento—443.6 miles—July 4 was won by Verbeck in a Fiat; Waterman in a Buick, second; Oldfield in a Fiat, third. All three used Firestone tires, and the first and second cars never changed a tire during the whole race.

On Saturday, July 5, The Firestone company held its annual picnic at Silver Lake. A special program was furnished until late at night and the expenses were paid by the company.

* * *

The same day was given by the B. F. Goodrich Co. to its employes as a holiday, and in addition each employe was presented with a dollar, this to take the place of the regular Goodrich picnic, which, on account of the large number of employes, it was found very difficult to have at one pleasure resort on a single day.

The Goodrich company, which recently paid a semi-annual tax of $96,400, is the largest taxpayer in the city of Akron.

Mr. C. S. Thompson, formerly advertising manager of the Diamond Rubber Co., and since its consolidation with the B. F. Goodrich Co., connected with that concern, has resigned, Mr. Tibbets now having full charge of the advertising department.

* * *

All Akron rubber factories are running day and night and are still unable to fill all their orders.

* * *

Manufacturers of rubber goods of all kinds are now using more aluminum flake in their work than ever before. This is due to the high quality of this pigment, combined with the low prices which now prevail.

Aluminum Flake, which is the product of The Aluminum Flake Co., Akron, is claimed by this company to have a distinct toughening effect on the rubber and at the same time to add life and elasticity. New concerns are being added almost daily to the already long list of satisfied users, and the older ones are using more than they have in the past. The trial of a sample by a prospect almost invariably results in an enthusiastic and steady customer. The officers of the company are very well pleased with the increase in its business.

THE RUBBER FACE AND THE POET.

A "fakir" I have seen upon Broadway,
Who holds between his finger and his thumb
A small red rubber face, now grave, now gay,
On which both smiles and frowns by turns will come.

A pressure slight—it wears an awful frown,
A little twist—a smile will wreathe the face.
I envy quite that small red rubber clown,
That smiles with such calm courage into space.

I would that I could wear a smiling face,
When down my lofty idols all are hurled;
Would I, tho weary in a prizeless race,
Could look with smile serene upon the world!

O. C. A. C.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE employes of the United States Tire Co. held a meeting a few evenings ago at 355 Valley street, Providence, to take steps for the organizing of a permanent social, literary and athletic association to promote a feeling of harmony and good fellowship among the men. A provisional association was formed with temporary officers, and working committees on by-laws were appointed. It was decided to hold a moonlight excursion on August 15 for the benefit of the association. A membership of 52 names has already been secured.

* * *

The Alice rubber shoe mill of the Woonsocket Rubber Co. at Woonsocket, and the Millville rubber boot mill at Millville, shut down on July 24 for four weeks, ending August 22. For several years it has been customary for these mills to close for one or two weeks during August, but this year the vacation period will be extended to four weeks, as the company intends making a number of unusual alterations. It is also going to install considerable new machinery, which, it is said, may necessitate the erection of another building. If this is done, the new structure will probably be located on Fairmount street, Woonsocket. It is stated that the company has orders enough ahead to guarantee work for a long time. The Alice mill employs 1,500 hands and the Millville plant 800.

* * *

One of the most interesting features of the Fourth of July parade at Bristol was an ancient coach belonging to Col. Samuel P. Colt. It is more than a century old and the family history of the Colts refers to one of Col. Colt's ancestors, James De Wolf, who rode from Bristol to Washington when he was elected a United States senator. The coach attracted much attention in the Natal Day parade, and its occupants—Col. Samuel P. Colt and his brother, United States Senator Le Baron C. Colt—received frequent applause.

* * *

The work of installing a first-class steam engine plant at the factory of the International Rubber Co., West Barrington, is progressing rapidly. It will be fully equipped with all modern improvements as regards boilers and pumps.

The shop recently vacated by N. C. Wallenthin in the Snell building on County street, Attleboro, has been taken by the Hospital Rubber Co., of which George J. Kelley, of Attleboro, is the principal owner and general manager. Extensive alterations and improvements are being made in the new plant.

* * *

A baseball diamond has been laid out on the grounds of the National India Rubber Co.'s factory at Bristol, and bats, balls and suits have been supplied for those of the employes desirous of playing the game.

* * *

Manager Le Baron C. Colt, of the National India Rubber Co., Bristol, arrived a few days ago from an extended business trip to Canada and the West. He at once assumed charge of the improvements being made at the company's plant. The erection of new structures to accommodate the cable wire department is being pushed, and the size contemplated in the original plans has been materially extended.

* * *

On July 15 the American Wringer Co., of Woonsocket, began paying its quarterly dividend to its stockholders, both common and preferred.

* * *

The Davol Rubber Co., 69 Point street, Providence, has

been calling for a number of girls to whom permanent employment will be furnished in the various departments of the plant.

THE RUBBER TRADE IN SAN FRANCISCO.

(By a Resident Correspondent.)

IF each of the automobiles sold to residents of this state beginning with February of this year averaged $2,000 in value, then there would have been spent for automobiles during that time $36,000,000. No matter what other departments of the rubber trade may be doing, it stands to reason that the tire business on this coast is good. There does not seem to be a great deal of activity in regular mechanical lines, but the demand for tires goes on without abatement and seems to be growing all the time. The duality of trade conditions indicates that the quietness in the mechanical branch must be of a temporary nature. There is money in the state, as is shown by the activity in automobile sales, but new projects of development, investments of capital, and the like, to cause renewed activity in the mechanical departments, are lacking for the time being, owing to the general conditions throughout the country which have affected capital—the tariff, the currency banking bill, etc.

* * *

The American Rubber Manufacturing Co., whose factory is situated at Emeryville, California, and whose offices have heretofore been located on Beale street, near Market, has taken fine new quarters at 408-410 Mission street. Here it has the first floor and basement of a recently erected concrete building, 45 by 113 feet in dimensions. This firm is doing a good steady trade, and has found it necessary to acquire bigger warerooms and salesrooms in order to handle the increased business. It has recently taken on the Hoyt Short Lap Leather Belt line, and has also undertaken an agency for the new Perkins Rubber Heel. This heel is being manufactured at its Emeryville factory, and is proving a good seller. The inventor is Wm. Perkins, a man well known to the rubber trade on this coast. He has made a heel which shows many marks of superiority to the regular rubber heel, and believes that it is going to be a success.

* * *

R. H. Pease, Jr., treasurer of the Goodyear Rubber Co., returned from his visit to Europe some weeks ago. He was to start on July 22 for a motor car trip to Portland, accompanied by A. B. Watson, assistant treasurer of the company, Mrs. Watson and Mrs. Howell. They expected to make the run to Portland in four or five days. Mr. Pease will remain in Portland indefinitely, taking charge of the business there. Mr. Watson, however, expects to return in a few days, by rail. Mr. R. H. Pease, Sr., reports that business is keeping up as well as at this time last year, altho there is still room for improvement.

* * *

B. H. Pratt, Pacific Coast manager for the Fisk Rubber Co., states that the double pneumatic tires which are being used on trucks are doing very well on this coast. Here the test is severe, because automobile trucks are bought with the idea of increasing the speed of delivery, and the roads are in many instances rough and not kept in good repair. The pneumatic double tire, however, seems to be better for the auto truck—for cars having a carrying capacity of from one to two and a half tons—than solid tires.

H. E. Argus, who had charge of the Pacific Coast mechanical department for the Diamond Rubber Co., has resigned his position, and will leave shortly for Akron. He has been with the Diamond company for 16 years, and has been in San Francisco with the firm during the past eight years.

W. G. Rigdon has just returned from his Eastern trip in the interests of the Gorham-Revere Rubber Co. This company reports a steady business in all branches, but an exceptionally lively trade in tires. Mr. Gorham is in San Francisco now, and is planning a campaign which will bring in plenty of business for all departments.

J. E. Newerf, manager for the northern California territory of the W. D. Newerf Rubber Co., reports that Miller tires are holding their own with excellent results on this coast. The fast road race in which many automobilists participated, between Los Angeles and Sacramento, showed not only the resisting qualities of the Miller tire, but also what an improvement has been made in all tires, to stand the present day tests.

Mr. Dodge, of the Western Belting and Hose Co., has returned from his six months' visit to Los Angeles, where he went to see that the branch store in that city got well established.

The Western I. & A. L. Purchasing Corporation, of Los Angeles, has changed its name to the I. A. L. Tire Co.

The Frontera Hardwood Rubber Co. has recently been incorporated at Tacoma, Washington.

THE RUBBER TRADE AT TRENTON.

(By a Resident Correspondent.)

THE fire which on July 2 destroyed one of the buildings of the Woven Steel Hose and Rubber Co., of Trenton, New Jersey, has not seriously interfered with the filling of that company's orders, shipments being made with reasonable promptness. Plans are under way to replace the burned building with others of improved construction which will afford more than double the floor space. The line of Squirt Hose for locomotives which this company has lately added to its manufactures is meeting with favor, in the Canadian market as well as here. This steam hose embodies the same ideas that have made so increasingly popular the "Protector" brand Woven Steel Pneumatic Tool Hose put out by this company, which also includes among its products Automobile Brake Lining and Friction Rings for automobile clutches.

John S. Broughton, of the United and Globe Rubber Co., is president of the company; Karl G. Roebling, treasurer; J. R. Kelson, vice-president and general manager.

The Mercer Rubber Co.'s plant is one of the busiest in this section of the country; orders for garden hose, fruit jar rings and fire hose keeping the operatives working day and night. Fruit jar rings are a specialty with this concern, millions of rings having been made during the past six months, the most successful half year in the history of the company. This concern has made big shipments of late to Mexico.

Every local rubber plant is rushed with business these days.

DEVELOPMENT OF MEMPHIS, TENNESSEE.

Those whose ideas of Memphis are mainly associated with cotton in its various forms, would be struck by the artistic "Views of Memphis," a copy of which (through the courtesy of Messrs. Towner & Co., of that city) has reached THE INDIA RUBBER WORLD. Memphis has much to be proud of, with its magnificent park system, its unequaled driveways and its boulevards. It has also high class residences with private grounds. Progress on a more extensive scale than that achieved by other cities with a population of 130,000, is shown by the handsome booklet received. One of the features of the city is constituted by its manufacturing districts, which are rapidly growing.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

The Annual Mid-Summer Outing of the Rubber Club of America.

WHENEVER a notice goes out that the Rubber Club of America will hold an outing, the members send the return post-card to the Secretary and at once proceed to restring their tennis racquets, to polish up their golf clubs and to hunt up their baseball bats, catching gloves and wire-cage mats—for the outing of this club numbers among its regular features tournaments of athletic sports, with worth-while prizes attached thereto; and while most of the contestants play for the sport of it, no one has ever been known to decline any prize which the judges have awarded to him.

The edict went forth that the outing this summer would be held at the grounds of the Belmont Springs Country Club, a beautiful spot in Waverly, a suburb of Boston. Thither on Monday, July 14, went the members and their friends, to the number of nearly a hundred and fifty. Many went in their private automobiles, but others were content (or had to be) to take the special trolley cars provided by the committee to carry them to Waverly station, whence, some law or ruling preventing the trolley's crossing the steam railway track, automobiles conveyed the pilgrims the remaining two or three miles to the clubhouse and grounds.

The day was perfect, neither too hot nor too cold. There were comfortable piazza chairs for the lazy and plenty of sport for the active. The tennis players found well made courts on which to try out their prowess. The golfers found a course which gave them plenty of opportunities to show their ability, and the baseball enthusiasts, players and spectators, secured a fairly satisfactory field, not more than a mile away, reached by trespassing through a hay-field and a dog-protected chicken yard.

The company scattered somewhat, by reason of the various contests in progress, but by far the largest contingent strode over hill and dale to the extemporized ball field, where a stone wall served as grandstand and a prostrate picket-fence as the "bleachers."

The two nines were convened and duly named. Captain Clapp called his nine the "Red Sox," though no one was able to find any hosiery of that particular hue. Captain Pitcher's nine rejoiced in the name of "The Giants," yet none of them measured more than six feet-eight. C. H. Booth, of the Michigan Shoe Co., umpired the game. Some of his decisions were remarkable, but only once did the spectators arise in their wrath and run him off the field. On his promise to do better he was allowed to return and finish out the six innings allotted to the game.

There were some wonderful plays, in fact so many that it would be invidious to mention any in particular. No severe casualties were recorded, but enough to make noticeable the absence of Doctor Stedman, who has never before deserted the club at an outing.

MEMBERS AND GUESTS OF THE RUBBER CLUB AT THE ANNUAL OUTING.

The personnel of the two nines, and the number of runs made were as follows:

"Red Sox."			"The Giants."	
Feinburg,	0	p.	Chipman,	0
Tyer,	1	c.	Page,	0
Clapp,	3	s. s.	Young,	2
Russ,	1	1 b.	Pitcher,	0
Clifford,	2	2 b.	Feinburg,	0
Norton,	2	3 b.	Lovejoy,	1
W. Page,	0	l. f.	C. T. Wilson,	0
Phipps,	1	r. f.	C. R. Wilson,	0
Rice,	1	c. f.	Wood,	0
	11			3

Chickering, the Boston photographer, as usual, was present as official photographer, and the company present looked as "pleasant" as requested, when the lens was uncapped. A half-tone of the result is presented as an illustration to this veracious narrative.

After the base-ball, there was a putting contest and a quoit pitching tournament, both of which found numerous entrants. W. L. Proctor, of the Enterprise Rubber Co., had supervision of the putting, and the score is given here in full, to show how close was the contest.

H. C. Benchley	27	A. W. Stedman	24
C. A. Pastene	28	H. C. Pearson	29
W. E. Piper	28	W. J. Kelly	31
F. G. Bowne	29	W. I. Swasey	27
F. H. Jones	26	H. C. Mason	27
Geo. B. Hodgman	26	F. C. Hood	25
Phil. E. Young	26	J. F. Kimball	26
W. G. Page	27	R. B. Price	27
L. B. Page	27	N. Lincoln Greene	28

The tennis prizes interested but four experts. C. H. Roper defeated Quincy Tucker 6 to 1 and 7 to 5. F. S. Dane beat R. B. Price 6 to 1 and 6 to 1. Roper beat A. A. Glidden 6 to 0 and 6 to 3, and Dane beat Roper 6 to 2 and 6 to 3.

By this time all the score cards had been turned in on the golf tournament, the full score of all the contestants being as follows:

	Gross.	Handi. cap.	Nett.		Gross.	Handi. cap.	Nett.
M. G. Hopkins	108	20	88	H. C. Pearson	116	20	96
J. F. Kimball	101	18	83	F. G. Bowne	125	27	98
C. A. Pastene	96	14	82	W. E. Piper	117	27	90
F. C. Hood	87	6	81	W. L. Wadleigh	93	12	81
Geo. E. Hall	102	16	86	W. G. Page	96	7	89
J. Frank Dunbar	100	18	82	G. B. Hodgman	119	25	94
F. H. Jones	98	13	85	H. C. Mason	107	14	93
J. H. Learned	105	15	90	A. W. Stedman	108	20	88
C. L. Parker	125	26	99	W. J. Kelly	110	27	83
R. S. Hodges	104	12	92	L. B. Page	89	6	83
G. A. Clapp	112	22	90	Philip E. Young	97	8	89

The quoit pitching tournament, in which the winners were decided by elimination, resulted in favor of McGraw and Benchley.

So much for the sports, which interested the rubber men during the entire afternoon. The dinner, which was to have been served at 6 o'clock, was still untasted at 7, as it was found difficult to tear people away from the putting and the quoit matches. The Lynn Cadet Band did its full duty in rendering music, from opera to ragtime, and although nothing stronger than pop and ginger ale was dispensed, everybody was jolly and happy, but also hungry, and when the line of march was taken to the handsome club-house, which had been transformed to a dining hall, all took their appetites with them.

The tables formed an immense E, the little middle portion taking care of the tail-enders who found all the other seats filled. However, there was room for every one, and food for every aching void. Though there was no sea-shore within an appreciable distance, there were clams, fish and lobsters, all hot, and swiftly absorbed.

Between mouthfuls, the diners, musically bent, sang chorus after chorus—most of them in tune. One song, however, did not get beyond the first few lines. Some one—unaware of the club's loss in May of a much esteemed member—started up "Has Anybody Here Seen Kelly?" That tune has always been a signal, at past dinners and outings, for a march down the hall and a stately measure back by the two Kellys—Wm. J., of Poel and Arnold, and Edward B., of the Mechanical Rubber Co. This time, the music stopped almost as soon as it began, and William Kelly spoke feelingly of the loss, by death, of Edward B., and proposed a silent toast to the departed. Captain Appleton, in a few well-chosen remarks, seconded this request, and Mr. Kelley's memory was honored in a silent tribute.

As is the invariable rule at these dinners, no set speeches were made. President Hodgman awarded the prizes, as follows, with short and appropriate remarks:

Golf.

First Prize, Gold Pocket Knife to F. C. Hood.

Second Prize, Thermos Carafe to Wm. L. Wadleigh.

Tennis.

First Prize, Smoking Set to F. S. Dane.

Second Prize, Cocktail Shaker to C. H. Roper.

Putting Contest.

First Prize, Cut Glass Vase to A. W. Stedman.

Second Prize, Tray and Coasters to F. C. Hood.

Quoits.

First Prize, Cheese and Cracker Dish to E. L. McGrew.

Second Prize, Gold Cigar-Cutter to H. C. Benchley.

The supper ended at 8:45 and soon the automobiles were speeding away for the city. Every car owner had plenty of friends to fill the extra seats, and the two cars provided by the management made several trips to the railway station.

During the day a meeting was held of the Executive Committee, at which President Hodgman presided. At that meeting, resignations as officers were received from Secretary H. P. Fuller and Assistant Secretary John P. Lyons. These were accepted, and resolutions were passed appreciative of their services. In accordance with a previous action of the management to employ the services of a paid secretary, Mr. H. S. Vorhis was appointed to that position with offices at 354 Fourth avenue, New York City.

The following applications for membership were received and approved:

ASSOCIATE MEMBERSHIPS.

F. J. Dunleavy, Boston-Bolivia Rubber Co., Boston;

Frederic Feinburg, D. Feinburg Co., Boston;

Jas. J. Clifford, Technical Supt. Boston Woven Hose Co., Cambridge;

W. H. Norton, Enterprise Rubber Co., Boston;

F. E. Lovejoy, American Rubber Co., Cambridge.

FIRM MEMBERSHIPS.

Chicago Rubber Clothing Co., G. G. Bryant, Secy., Chicago;

Walpole Tire & Rubber Co., A. T. Baldwin, Walpole and Boston, Massachusetts;

Lee Tire & Rubber Co., Edward Lee, President, Conshohocken, Pennsylvania.

Some consideration was given plans for the coming season, and the meeting adjourned, to meet at call of the president in September.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

The Hodgman Glen Island Outing.

OF the many annual field days and outings that the Hodgman Rubber Co. has given to its employes none have approached that of June 28 in this the 75th year of the company's existence. Beautiful Glen Island was the place chosen for the day's outing. A most capable committee arranged everything, to the smallest detail, far in advance, so that every event came in its proper place, every employe had a good time, and there were no delays and no accidents. When the 2,000 employe guests arrived at Glen Island at noon they found a big barbecue just ready to be discussed. Then came a hotly contested ball game, in which the Hodgman nine came off victorious. Then in rapid succession followed events such as "Shoe race" (boys)—Fifty-yard dash (girls)—Potato race (girls)—One-third mile run (men)—Egg and Spoon race (girls)—Hobble skirt race (girls); and a Tug of war between representatives of the Mt. Vernon and the Tuckahoe factories, which the latter won. In addition, the regular amusements at the Island—such as roller coasting, bowling, billiards and bathing—were all well patronized by the visitors.

A monster banquet was the beginning of the evening's entertainment. After the dinner—which was excellent—President George B. Hodgman made a brief speech of welcome. He was followed by Mayor Fiske of Mt. Vernon, and he in turn by the editor of THE INDIA RUBBER WORLD. Then came the adjournment to the dancing pavilion, and some hours later the return to Mt. Vernon and Tuckahoe, and the "Best Hodgman Outing" and one worthy to commemorate 75 years of successful existence came to an end.

BALL GAME AT THE HODGMAN GLEN ISLAND OUTING.

BANQUET AT THE HODGMAN GLEN ISLAND OUTING.

NEW TRADE PUBLICATIONS.

CINCINNATI RUBBER MANUFACTURING CO.

In catalog C, lately issued, the various features of the mechanical rubber goods made by the Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, are fully listed and illustrated. Commencing with an effective cut of the factory buildings, the reader's attention is called by the catalog to the four varieties of plain belting, followed by two of stitched and three varieties of friction surface. Next in order come beltings for various special uses, such as oil wells, conveyors, elevators and other purposes. Several pages are devoted to the use of rubber belting, with a formula for determining the horse power represented.

The subject of hose is a big one and is appropriately dealt with by comprehensive illustrated lists of steam, water, lawn, fire, mill, brewers' and pneumatic tool varieties. Other specialties are qualities for use in automobiles, chemical engines, etc.

Packing includes the well-known "Norka," "Old Crow" and "Cincinnatus" grades in various forms, while a complete line of tubing is also represented. Rubber covered rolls make a special feature of this concern's product.

Numerous other specialties complete the line as shown in this highly useful and interesting catalog, dealing with the entire range of mechanical rubber goods.

A COMPREHENSIVE CATALOG.

Covering as it does druggists', chemists' and perfumers' glassware, as well as druggists' sundries, the annual price list of the Whitall Tatum Co. gives a comprehensive idea of the lines manufactured and carried by this enterprising concern. The number of articles handled may be inferred from the fact that the index to the principal ones includes nearly 600 items; while the catalog itself numbers 198 pages, copiously illustrated. Glassware occupies 72 pages, the remainder of the space being given to druggists' sundries.

The importance of rubber as an element in the manufacture of druggists' sundries is shown by the catalog itself. That the baby from its earliest age is a factor in the consumption of rubber is shown by the cuts of nipples, comforters and "toothers," of which a large variety is displayed. Following these are various makes of hard rubber syringes, after which come water bottles, atomizers and sanitary goods. Hospital specialties, such as ice bags, invalid's feeding cups, bandages and thermometers carry the line further, till the important heading of hard rubber combs is reached, of which some forty numbers are listed, many of them being illustrated.

Attractive in form and compiled with much care, this catalog is a handy guide in the purchase of druggists' glassware and sundries, and as such will be appreciated by all interested in that branch of trade.

SOME NEW GOODRICH ISSUES.

GOODRICH ROAD GUIDES.

Among the many advantages offered by the automobile is the facility it affords of traversing the distance between populous centers. To fully appreciate this point it is necessary to accompany the motorist in spirit on his journey. Such an opportunity is afforded by a perusal of the folder issued by The B. F. Goodrich Co., "Omaha to Kansas City." The intending or actual tourist finds in this convenient pocket guide a full reference to the landmarks distinguishing the way between the two cities named. The fullness of the information may be inferred from the fact that there are no less than about 150 references, covering the distance of 221 miles.

Niagara Falls being the objective point of numerous summer motorists, a neat card issued by the Goodrich Co. is of special value just now. The route from Buffalo to Niagara Falls (22½ miles) is indicated, with references to eight points on the way. For the benefit of the motorist continuing his journey into Canada, the routes to Hamilton (49½ miles), and thence to Toronto (42½ miles), are shown on the same principle as that of the guide from Buffalo to Niagara Falls.

FURTHER GOODRICH LITERATURE.

In a new group of folders the B. F. Goodrich Co. has further emphasized the merits of certain specialties in its product. These include the ever present subject of rubber bands. As the folder explains, the peculiarity of rubber bands is that they are often not to be found when wanted; this elusiveness being obviated through the "Goodrich Bank Band Assortment," which contains seven sizes in a neat box. This handy device is sufficiently large not to be easily misplaced, forming a useful adjunct of the busy man's desk. The bands, moreover, are of the standard Goodrich quality and are guaranteed for five years against defects of material and manufacture.

Another specialty, tho different in character, is the "Goodrich Rubber Bucket" holding over two gallons and when collapsed taking up a space of only 9 x 2½ inches. Its practical advantages include a strainer in the spout which keeps back all impurities. This convenient motor accessory is more easily handled than the ordinary bucket and deserves the attention of every motorist.

Lawn tennis retaining its popularity as an outdoor game, it is of interest to note from still another folder that the Goodrich ball has been adopted for the season of 1913 by the United States National Lawn Tennis Association. It may be used in all tournaments under association rules.

POPULARIZING A PASTIME.

While the automobile and the motorcycle have done much to affect the popularity of the bicycle, there are still many adherents of the latter. To such the question of tires is of primary interest. A neat folder recently issued by the B. F. Goodrich Co. explains the advantages of two special tires: "Roadworthy," price $5.50 per pair, and "Maxecon," price $5 per pair, in the standard sizes. It is claimed that these tires embody the highest quality consistent with their low prices.

POCKET RULE BOOK OF GOLF—1913.

Seeing that handiness is the chief desideratum in a booklet containing the rules of any popular game, the B. F. Goodrich Co. has assuredly furnished golf players with just what they want. In a neat stiff-covered booklet, 6 x 3, are condensed into 42 pages the rules of golf, both for ordinary playing and matches; while in the remaining six pages the merits of the Goodrich golf balls are fully explained and illustrated. The "Stag," "Moose," "Comet," "Meteor," "Scotty," "Final" and "Bantam" are no longer mere names, but by the aid of the cuts become realities, of interest to all golf players.

THE GOODRICH FOREIGN SERVICE.

Now that a large number of American motorists are in Europe, a folder issued by the B. F. Goodrich Co. has a special interest for the actual or intending tourist. It gives just the information needed by the automobilist or bicyclist as to where he can obtain standard Goodrich tires in American sizes with inch measurements, distinguished from those in millimeters. The company has its own houses in England, Germany, France and Belgium with agents carrying a stock of tires at some fifteen various points in nine different European countries. For the benefit of motorists, the Goodrich company issues an "Auto Map and Guide to Europe," which is available free, on request made to the Goodrich Touring Bureau, Akron, Ohio.

REDUCTION IN REPAIR PRICES.

The retail tire dealers and repairers of Toledo, Ohio, have done a wise thing. The last of June they made a general agreement to reduce their prices for tire repairs and materials, on the ground that the cost of tires had been considerably lessened during the last two years. Charges now are 25 cents for vulcanizing a nail puncture, as against 50 cents, the former price. The charge for patches has been reduced about 40 per cent., and the price for re-treading has been lowered 15 per cent.

The Editor's Book Table.

L'APPAREIL LATICIFERE DES CAOUTCHOUTIERS. BY DR. Alphonse Meunier, Professor at the University of Louvain; 1912, Brussels. Imprimerie Industrielle & Financiere. [Paper; text, 52 pages; plates, 8 pages.]

This highly artistic treatise constitutes the first section of a series of "technical memoranda," published by the Agricultural Service of the Belgian Colonial Ministry, and deals with the latex-conveying system of the rubber tree. In his introductory remarks, the author comments on the fact that the discernment of suitable varieties, and the choice of the forms of cultivation and exploitation most appropriate to each description, are questions of grave interest; particularly when plants are removed from their natural habitat, for the benefit of regions newly opened to human activity. This subject, it is added, specially affects the Belgian Colonial Ministry, with a view of avoiding the recurrence of the difficulties experienced in the past, and of assuring future success.

In this connection, the anatomical structure of trees containing rubber calls for attention, the scientific knowledge of the distribution of the latex-conveying system being the necessary foundation of any judgment formed on the question.

Dr. Meunier, in view of the importance of the subject to the Belgian Colonial Administration, has devoted his initial researches to the following varieties which have been adopted in the colonies for systematic cultivation:

I. Asclepiadaceæ—*Periploca* and *Cryptostegia*.
II. Apocynaceæ—*Clitandra, Landolphia* and *Funtumia*.
III. Euphorbiaceæ—*Hevea* and *Manihot*.
IV. Urticaceae—*Ficus* and *Castilloa*.

As known, the structure of the latex conveying system, as well as that of the other constituent systems, remains more or less alike in the different representatives of the same natural group; harmony being thus demonstrated between the internal and external characteristics displayed by members of the one family. This fact has enabled the author to dispense with the multiplication of the subjects treated.

In the text of this comprehensive summary, the four varieties named are treated in detail, and conclusions drawn regarding them.

The eight graphically executed colored plates, each containing some ten botanical representations, form a valuable addition to the work and emphasize its salient features. Much credit is due to the author and artists engaged in the production of this compendium.

TRADE MARK LAWS OF THE WORLD AND UNFAIR TRADE. By B. Singer. Chicago, 1913. [Cloth, 686 pages. Price, $5.]

While the American import commission merchant has plenty of worries in his relations with foreign countries, the export merchant is exposed to special troubles in the matter of trade marks. Owing to the lack of uniformity in the laws of the various commercial nations of the world, experience with one country is of little service when dealing with another. Hence the value of such a detailed and comprehensive work as that of Mr. Singer..

It is not sufficient for a work to contain information, but it must be in such form as to be easily accessible when wanted. This object has been attained in the case of Mr. Singer's book, by alphabetical division of the countries of the world, and a classification of the regulations affecting each branch of the trade.

A feature of practical utility consists in the introductions leading up to the details regarding the respective countries, in which the principal geographical and statistical facts affecting each nation are condensed. The work displays the result of much painstaking and arduous labor, involving close study of international trade-mark legislation.

ZOLL-HANDBUCH FUR DIE GUMMI INDUSTRIE. BERLIN, 1910. Union Deutsche Verlagsgesellschaft. [Cloth, 232 pages.]

Duties form such an important factor in modern business calculations that anything tending to their simplification is necessarily of value. Hence the "Handbook of Duties for the Rubber Branch" is a valuable help to those engaged in the export trade. The duties levied on rubber goods in 71 countries of the world are shown in detail. As a work of reference this summary will be appreciated for its careful and accurate compilation.

DUNGUNGSVERSUCHE IN DEN DEUTSCHEN KOLONIEN. BERlin, 1912. Reichs-Kolonial Amt. [Paper, 72 pages.]

One of the principal characteristics of the last decade in German agriculture has been the recognition of the necessity existing for the systematic use of artificial fertilizers, to replace the nutriment drawn from the soil by the constantly increasing volume of the crops harvested. Even in the least progressive districts of Germany there is hardly an agriculturist who has not tried these substitutes, and in consequence incorporated them in his plans.

In the above report on "Trials of Fertilization in the German Colonies," the Imperial Colonial Office remarks that the practical neglect of this subject in the German possessions may be explained by two facts. In the first place, the idea has been prevalent that the virgin soil of the hitherto uncultivated area is sufficiently rich not to require, for a long time to come, the same measures as have been found necessary in Germany as to fertilization. Another reason has been that the principal forms of cultivation in the German colonies are without a parallel in agriculture at home, belonging there rather to the forest industry. Hence it was concluded that fertilization was not required in the German possessions.

The Colonial Office expresses the opinion that, however plausible these two views may seem as to the needlessness of artificial (or of any) fertilization, they will not stand close investigation.

In the year 1911-1912 there were made in the German colonies 97 tests of fertilization, including 14 of rubber. The number for 1912-1913 was estimated at 139. Full details of the various tests are quoted in this valuable report.

WORLD-WIDE ECONOMICS.

In an issue of 376 pages, the new German quarterly, the "Weltwirthschaftliches Archiv" has taken its place in the economic field, under the direction of Dr. Bernhard Harms. The first number contains an editorial on "Universal Economics." Herr Karl Thiess, of Dantzig, deals with "The Universal Railway Gauge," while Herr Fitger handles the subject of "Marine Insurance in the World's Commerce." Professor Liefmann describes the "International Organization of the Frankfurt Metal Trade," and there are other interesting articles on economic subjects.

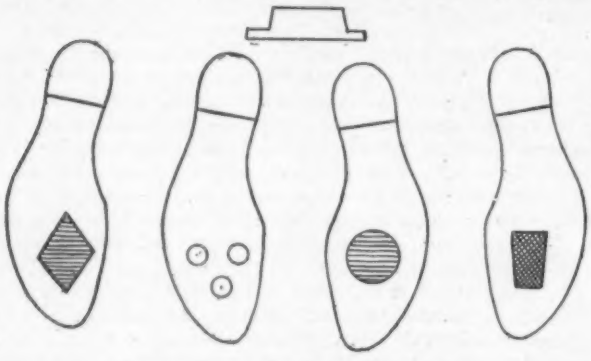
The current literature affecting international commerce is fully noticed, and certain sections deal with the newest books on the various subjects of special or general commercial interest. Statistical returns of the international trading of the leading nations form an interesting feature and enhance the value of the publication as a work of reference. It is evidently the result of much careful investigation and compilation.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NON-SKID SHOES FOR DANCING.

THE old adage says "There's nothing like leather." But this does not mean that there's nothing better than leather. The up-to-date faddist finds that leather can be less satisfactory for some purposes than some other substance. And the up-to-the-minute dancer has found that rubber, as an auxiliary, at least, has it uses in the Terpsichorean freaks and fads of the concert hall and ball room.

Time was, and not so long ago, either, when the dancing-pump had a sole as polished and shiny as brush and burnisher and heel-ball could make it, and the dancer could glide over



RUBBER PLUGS FOR DANCING PUMPS.

the polished floor with lissome grace to the strains of the seductive waltz. The janitors, however, learned new stunts in waxing and polishing, until the floors rivaled plate glass in smoothness, and glacier ice in slipperiness.

Meanwhile, the character of the dances changed, and even as the stately minuet of past cultures gave way to the polka and the galop, these have been followed by the "barn dance," the "turkey trot," the "tango," and by steps and dizzy gyrations which would make a whirling dervish turn green with envy, could anything change his color, or reveal it, under the dirt incrusted on his skin.

There are modern dances which require a course in gymnastics as a preliminary to their accomplishment. Perhaps the stunts of the cabaret and the vaudeville stage are responsible for the present-day fad. At any rate, modern dancing is to some degree dangerous, and the remedy is—rubber.

Today dancing pumps have as glassy soles as ever, but not all over. Even as the automobile must have a brake, the pump requires one friction-spot, at least, to save the wearer from the slip and fall which are made possible by the wild contortions, the speedy steps and the quick changes of direction in the dances. And the remedy is a little piece of rubber in the sole.

There are two stories as to the origin of this marked improvement, which is now becoming so popular that manufacturers are adding it to their lines of samples; so that what has hitherto been a made-to-order specialty is now a mercantile proposition.

It is said that a couple of vaudeville stars, whirlwind dancers, found that while their act required them to wear shoes or slippers with polished, slippery soles, some of their steps were difficult and positively dangerous, because of this very fact. How to combine two opposite qualities in a sole was solved by inserting a plug of rubber where it would serve as a safety tread, much the same as the friction plug does in the rubber heels of the present day. These actors, having found by experiment the value of such a combination, imparted their discovery to others, and in the end brought about a demand for dancing pumps having this improvement.

The other story is that a well-known firm of Boston shoe dealers, which makes a practice of sending its salesmen, with samples, to all the college towns throughout the country, found that the young college chaps complained that the glassy soles of the dancing pumps were too slippery. The head of the house, himself a society man and a dancer, set to work experimenting. First a half sole of rubber was tried. It didn't slip, but it didn't slide. Further experiment proved that the insertion of rubber golf plugs at the ball of the foot was fairly effective. The smaller ones, of half an inch in diameter, were not large enough, but the inch-wide circular golf studs or plugs, set three in each sole, and pared down even, or nearly so, with the sole, answered the purpose. But as is usually the case, tastes or experiences differ, and while some prefer an irregular square of corrugated soling, others order a two or a two and a half inch circle, while another favorite shape is a square, set corner-ways, as shown in the diagrams.

The method of inserting these safety patches is to cut out a portion of the sole to the shape of the rubber, which is cut with a flange all around, similar to a golf plug. This lip or flange is cemented to the under surface of the sole, thus securing it in place. Some are finished even with the face of the sole, while others are left with their corrugated surfaces slightly higher than the leather.

In use it has been found that the leather wears away faster than the rubber, thus allowing the latter to do its work. The dancers soon learn to glide on the shiny leather surface, and to stand firmly on the rubber.

As has been said above, manufacturers are now showing these new pumps among their samples, and shoe dealers who cater to the society and the college trades are carrying them in stock, and working up an increasing business. Thus a new use of rubber has been discovered and utilized.

BALATA BELTING AS VIEWED BY AN EXPERT.

IN the Akron letter in our June issue mention was made of the fact that Mr. Anthon Berg, of Christiania, Norway, had just completed the installation of a balata belting and asbestos sheet packing plant for the Goodyear Tire & Rubber Co. of that city. Mr. Berg recently sailed for his home in Norway, but expects to return in the fall and may install other balata belting plants. He is a great enthusiast on this sort of belting. It is a well known fact that balata belting is the toughest kind made. In Mr. Berg's opinion it is at least 100 per cent. stronger than leather belting. He states that in Norway twenty years ago belting was about evenly divided between leather and rubber, but that now there is no rubber belting in that country, about one-third of the belting there used being made of leather, the other two-thirds of balata; and he states that this same condition exists practically all over Europe.

In this country probably not over 5 per cent. of the belting used is made of balata, but the proportion is constantly increasing. Besides the Goodyear Tire and Rubber Co., where balata belting machinery was recently installed, there are three other companies, viz., the New York Belting & Packing Co., the Republic Rubber Co. and the R. & J. Dick Co., Ltd., which are making balata belting.

In addition to its superior strength, a balata belt takes a more tenacious hold on the pulley and is practically stretchless, while other belting stretches from 6 to 10 per cent. This stretchless quality, which eliminates the necessity of stopping machinery to tighten up a belt, makes it less expensive to use, and its lightness also makes it economical.

The Obituary Record.

FREDERICK M. SHEPARD.

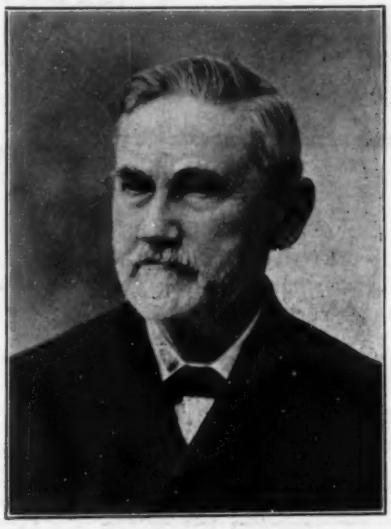
FREDERICK M. SHEPARD, for five years president of the United States Rubber Co., for over a third of a century president of the Goodyear Rubber Co., and for sixty years a prominent figure in the rubber industry of America, passed away after an attack of appendicitis, at his summer home in Norfolk, Connecticut, on June 30, in his 86th year.

Mr. Shepard was born in Norfolk, on September 24, 1827. His father was Captain John Andrus Shepard, a farmer, hotel-keeper, the postmaster of his town, and a prominent character in that community. Mr. Shepard's original American ancestor was Edward Shepard, who came from England and settled in Cambridge, Mass., in 1638—from which it will be seen that Mr. Shepard might very properly be referred to as belonging to the "old stock." After graduating from the local school he helped his father for a short time, and then, being an ambitious youth, went to Hartford and secured a position in one of the largest stores of that city. But he had his eyes on a still wider field, and about the time he reached his majority he went to New York and became connected with a retail shoe store. Soon after, in 1853, he entered the rubber industry (where he was destined to be conspicuous for two generations), becoming secretary of the Union India Rubber Co., of which he was later the president.

In 1872, in association with the late Joseph A. Minott, he established the Goodyear Rubber Co., becoming its president, a position that he continued to occupy until seven years ago, when he retired because of advancing years; still, however, remaining on the board of directors. In 1896 he was elected president of the United States Rubber Co., which important post he held for five years. During his incumbency, and largely through his activities, this corporation secured control of the Boston Rubber Shoe Co., then—as for many years before that time—the largest rubber footwear manufacturing concern in the world. In addition to these rubber associations Mr. Shepard was connected in an influential capacity with the Lambertville Rubber Co. and the Rubber Clothing Co.

Important and commanding as were his relations with the rubber industry, they by no means engrossed his entire attention, as he was an active director during the greater part of his life in a variety of other undertakings. In 1868 he took up his residence in East Orange, New Jersey, and soon became prominent in its business and civic affairs. He was chiefly instrumental in establishing the East Orange Safe Deposit and Trust Co., The East Orange National Bank and the Orange Water Co. He was also one of the commissioners who constructed the fine system of parks in Essex County, for which $4,000,000 were raised. He took a profound interest in the social and religious welfare of the community, acting as president of the Free Library, and as a member of the advisory board of the Orange Memorial Hospital, erecting and equipping for that institution a large pavilion for the treatment of tubercular diseases, as a memorial to his son. He was extremely active all his life in the work of the local Presbyterian Church and officiated as superintendent of the Sunday School for over a quarter of a century. His chief benefactions, however, were directed toward the welfare of the little Connecticut village where he was born. They included a public park for the town, a lawn and fountain adjoining the railroad station, ample grounds for one of the churches, and various school improvements; and in all possible ways he showed his interest in the development and well-being of the village where he continued to have his summer home during the greater part of his life.

Mr. Shepard was a man of the soundest business judgment, which was reflected in the practically uniform success of every undertaking upon which he embarked; but, notwithstanding his financial success—which enabled him to accumulate a fortune generally estimated at several millions—he was personally most unassuming and democratic. He showed the same discrimination in his charities as in his business affairs, and his benevolences were all of a practical character. It was his good fortune to be permitted to round out a long life of honorable and successful industry and continuous tho unobtrusive usefulness.



FREDERICK M. SHEPARD.

He was married in 1854 to Annie C. Rockwell, who, together with two sons and three daughters, survives him. The funeral was held at his summer home in Norfolk, and the burial was in Greenwood cemetery, Brooklyn.

ANTHONY N. BRADY.

The death of Anthony N. Brady on July 22 in London, at the age of 70, has removed from the scene a noted financier of the later school. Wall Street did not know of his existence previous to 1891, when he secured a suburban trolley contract and rapidly rose to power in the world of finance. Apparently, everything he touched prospered, and he gradually extended his operations to include railroads; gas, electric light and power companies; banks and industrial enterprises.

Mr. Brady was born August 22, 1843, in Lille, France, whither his parents had fled from Ireland to escape political persecution. They emigrated shortly afterwards to America, settling at Troy, New York, where the son attended school till be reached the age of 13, when he had to assist in the support of the family. He occupied one position after another at the Delevan House, Albany. This brought him into touch with many public men, and was the foundation of ultimately valuable friendships, which later on helped him to carry out his different plans.

At the age of 21 he found the wished-for opportunity of starting in business on his own account, opening a tea store in Albany. This venture proving successful, he established a chain of such stores in Albany, Troy and other neighboring cities. The money he made in tea, he invested in stone, cornering the supply of granite available for paving and building operations in Albany.

The boldness of this stroke impressed various prominent

financiers, such as Roswell P. Flower, E. C. Benedict and Edward Murphy. Consequently, when Mr. Brady sought their aid in consolidating the Albany gas companies, he readily secured it, and was made president of the new combination. The results obtained by the use of a new water-gas process were highly profitable for the four members of the syndicate.

He next turned his attention to the electrification of the Albany and Troy horse car lines, being a pioneer in the substitution of overhead electrical wire for horse traction. Subsequently, he reorganized and consolidated the Chicago gas companies.

ANTHONY N. BRADY.

His Western connections brought him into touch with oil, the possibilities of development in Ohio attracting him in connection with fighting the Standard Oil Co. The Manhattan Oil Co., of Lima, Ohio, was pushed into competition with the former. Mr. Brady soon got into touch with leading financiers regarding a score of ventures in which oil and gas figured. Electricity followed, until he came to be regarded as the most influential single factor in traction, lighting and power lines.

Pursuing his onward way, Mr. Brady came to New York in 1891, securing a contract for equipping with new rails a street railway in the Bronx, nicknamed the "Huckleberry." Being unable to collect the money due him, he took over the road, organizing for its operation the Union Railway Co., afterwards leased to the Metropolitan Street Railway Co., which Mr. Brady helped to organize, and which had a capitalization of $30,000,000.

About this time, in conjunction with Thomas Ryan and the late W. C. Whitney, he acquired the Edison Co., capitalized at $25,000,000; and having purchased other companies in the same field, he organized the New York Gas and Electric Light, Heat and Power Co. The last named combination was taken over by the Consolidated Gas Co., with $80,000,000 capital, of which Messrs. Brady, Whitney and Ryan were elected trustees.

Later on, Messrs. Ryan and Brady had a disagreement, after the former had suffered in the Wall and Cortland street deal.

In 1894, Mr. Brady, in conjunction with the late Roswell P. Flower, secured control of 250 miles of Brooklyn surface railways, organizing the Brooklyn Rapid Transit Co., with a capital of $20,000,000, and becoming chairman of the executive board. The efforts made some half a dozen years ago by Metropolitan interests to control the Brooklyn Rapid Transit Co. forced Mr. Brady to make a counter alliance and to repel the attack.

Among other combinations, Mr. Brady organized the Metropolitan Traction Co., which was the foundation of the present New York trolley system, and which is now the New York Railways Co. Providence, Washington, Philadelphia and many other cities also engaged his attention in public utility organizations.

To tell the story of Mr. Brady's career in Wall Street would be to recount the financial history of the past 20 years. Some sixty corporations are said to have been working under his guidance, while his heavy investments are understood to have been in Brooklyn Rapid Transit, American Tobacco and United States Rubber. In addition to these, a number of smaller holding go to make up the total of $100,000,000 at which his estate is estimated. Since 1898 all of the New York lighting and power companies have been under his control, and his son is president of the New York Edison Co.

One of the most noteworthy events of Mr. Brady's life was the merger which he brought about in 1905, between the Rubber Goods Manufacturing Co. and the United States Rubber Co., a work for which he was probably better fitted than any other man in the financial world.

Mr. Brady was a member of the syndicate which in January, 1899, organized the Rubber Goods Manufacturing Co. In May, 1905, a new syndicate was formed which secured control of the capital stock of the company. He acted on behalf of that syndicate (known as the "Brady" Syndicate) in the negotiations with the United States Rubber Co., which resulted in the merger of the two corporations. In June, 1904, Mr. Brady became a director of the United States Rubber Co.

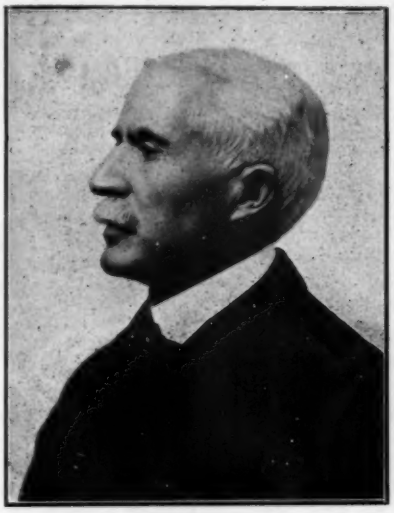
Mr. Brady recently sailed from this country for Europe, intending to spend his vacation abroad. His trip was undertaken against the advice of his physicians, who regarded his condition as being unfit for prolonged travel. When the gravity of his illness became apparent, Mrs. Brady was called from this side, and reached London before her husband's death. The remains have been brought over by the *Baltic*. He is survived by his wife, Mrs. Marcia Myers Brady; two sons, Nicholas F. and J. C. Brady; and three daughters, Mrs. James Farrell, Mrs. Marcia Tucker and Mrs. Mabel Garvan.

Mr. Brady, while able to do twice the average man's work, never seemed in a hurry. His mind was extremely active and he got at the bottom of things quietly and accurately. He was considered a firm friend, never forgetting a favor.

Z. T. LINDSAY.

Zachary T. Lindsay, one of the most highly esteemed members of the rubber jobbing trade in this country, died on June 30, after an illness of a few weeks, at his home, "Highridge," Omaha, Nebraska. Mr. Lindsay was born in Iowa in 1848, and at the age of 16 he showed the sterling stuff of which he was made by enlisting in the Iowa 45th Infantry. Tho the war came to a close not very long after, he saw much active service. In 1868, at the age of 20, he joined the Western pioneers and went across the plains in a wagon to California, where he tried his luck at mining—a very uncertain occupation then as now. Three years later he returned to Iowa and opened a shoe store, which was the beginning of the career that he was to continue for over forty years. In 1878 he moved to Council Bluffs, where he opened a larger store; and six years later he made another move, to Omaha, and soon had under his management four shoe stores, in which rubber footwear formed an important department, the business soon developing into a large wholesale rubber trade. This enterprise was so successful that in 1898 the business was purchased by the United States Rubber Co., and the name changed to The Interstate Rubber Co., Mr. Lindsay being retained as president and manager, a position he continued to hold to the day of his death. In the management of this large Omaha distributing concern he held not only the confidence of the great corporation with which he was connected, but of every member of the local trade—and this implicit trust imposed in him by all who had any business relations with him was perhaps the largest factor in his success.

He did not, however, confine his attention solely to his own private affairs. He was conspicuous in all civic and community interests. He was one of the charter members of the Commercial Club of Omaha and served at different times on nearly all its important committees. He acted as chairman at the Board of Trade meeting which decided on the Trans-Mississippi Exposition held a few years ago at Omaha; and the success of that enterprise was very considerably due to his initiative and good



ZACHARY T. LINDSAY.

judgment. He was also deeply interested in the religious life of his community, being a staunch Presbyterian and continuously active in the work of that church.

He is survived by his wife, who has been prominent for many years in the artistic and literary life of Omaha, and by two children—a son, Harry S. Lindsay, of Excelsior Springs, Iowa, and a daughter, Mrs. George N. Peek, of Moline, Illinois.

The accompanying illustration is made from a recent photograph and gives an excellent likeness of Mr. Lindsay as he appeared in his later years.

WELLING SICKEL KATZENBACH.

A remarkable instance of bravery during a long illness is afforded by the last years of Welling Sickel Katzenbach, of Trenton, who died July 18 at the early age of 29. His career, tho short, was notable.

Born on April 18, 1884, after passing through the Phillips Academy, Andover, Massachusetts, he entered Princeton University in 1900. His work there was largely in the department of chemistry, rendering him a master of that profession. In 1904 he graduated from Princeton, with the degree of A. B. and high distinction in chemistry.

After his graduation he was engaged in analytical chemistry, being subsequently appointed secretary of the Charles F. Scholes Chemical Co. of New York. Altho' the state of his health caused him to resign that position and while a great sufferer, he organized and established the business now conducted by the Katzenbach & Bullock Co. of Trenton and New York, with extensive connections both in America and Europe. Some three years ago, with his father and Mr. E. L. Bullock, an old friend, he incorporated the company, being made its president.

His unfailing courage and ability enabled him during his illness to so formulate and guide the policies of this company that it has materially developed since its first establishment. By the help of the long distance telephone, which he had constantly by his bedside even in the hospital, he was in a position to watch over the growing business in detail.

His popularity at college was such that his classmates at their reunion of 1912 were placed in communication with him by telephone, being thus able to express appropriate greetings.

The brief yet eventful life of the deceased has been a notable instance of a courageous fight against a fatal disease and will serve as an inspiration to his surviving associates.

THE RUBBER INDUSTRIES OF NEW JERSEY.

THE annual volume of industrial statistics of New Jersey has been issued, bearing testimony to the labors of Hon. Winton C. Garrison, Chief of the Bureau of Statistics of that State. It embodies the records of the factories for 1911 as collected by the State census officials in 1912.

In the State there are 2,475 factories, of which 2,172 are divided among 70 industries. Among the latter are 53 rubber factories (hard and soft) in respect to which the following results are shown:

PERSONS EMPLOYED.—The total number was 8,221, composed as follows: Men over 16, 6,832; women over 16, 1,287; children under 16, 102. The total of 8,221 showed a decrease of 238 as compared with 1910, when there were 8,459 workers in the same number of 53 factories. The average yearly earnings per worker were in 1910, $514.96, and in 1911, $533.25.

Of the 53 factories only 2 were operated by private firms, the remaining 51 being corporations. The total amount of capital invested in the rubber industry of New Jersey was $30,140,119, made up as follows: Land and buildings, $5,414,299; machinery and tools, $5,489,063; bills receivable, stock in process of manufacture and cash on hand, $19,236,757. The capital invested in 1910 in the 53 factories represented $28,902,913; there having been thus an increase of $1,238,206.

The production of the 53 factories amounted in 1910 to $34,733,592, and in 1911, to $36,057,242. An analysis of the principal elements of cost would show that the stock used represented in the earlier year $23,647,377 and in the later, $23,657,966. Thus a production increase to the extent of 4 per cent. was obtained from about the same value of raw material. The production in 1911 of $36,057,242 involved among other payments: Stock, $23,657,966, and wages, $4,383,385, the margin left applying to other elements of cost.

Steam was used for driving 117 engines, with 22,575 h. p., and electricity for 188 motors, with an aggregate of 1,966 h. p. The business done represented 78.77 per cent. of the total capacity of the factories, a result surpassed by only about 10 of the 90 classifications of New Jersey factories. The rubber industry of New Jersey thus seems to be steadily improving its position.

A RUBBER TOY PUT TO USE.

Occasionally an article meant for a serious purpose is diverted into the channels of amusement. And the reverse is also true, where an article intended for a plaything is put to serious purpose. For instance, a storage battery that doesn't quite fill its box can be effectively packed by the insertion of a few of the little toy rubber balls sold in toy stores and general stores. They can be secured in various sizes and squeezed in between the battery and the outer box, serving very satisfactorily as bumpers to lessen jars and jolts.

An American consular officer in Canada reports under No. 11,367 that $2,500 have been appropriated by a city in his district for the purchase of an automobile fire truck and hose. Further particulars can be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C.

Under No. 11,328, a consular officer in a European country sends the Bureau of Foreign and Domestic Commerce, Washington, D. C., an inquiry from a business firm for "paracote" roofing. said to be a prepared material resembling paper, manufactured in the United States.

New Rubber Goods in the Market.

RUBBER FLOWERS FOR BATHERS.

ORIGINALLY, of course, the province of the bathing suit was to be worn while bathing, and the plainer the better. But with the increasing popularity of the seaside resort the bathing suit has come to be an outfit for general display on the beach, and consequently it has grown more ornate with each succeeding year. However, as it has not yet come to be quite good form to put on a bathing suit and not bathe at all, it is still customary before returning to the dressing room to take at least a momentary dip, which necessitates a suit that will stand water. Hitherto bathers in search for adornment have been barred from the use of feathers and flowers, because these would be ruined in even a momentary dip; but the coming summer, so the fashion experts say, will see fine floral decorations on many a bathing suit at the smarter beaches—roses, violets and everything else known to decorative botany. Nor will they

be injured, no matter how delicately hued, even tho the bather remains in the water indefinitely, and they can be worn day after day through the season, for they will be made of rubber.

GOOD FORM WHILE BATHING.

A keen summer correspondent at New Bedford writes to one of the Boston dailies of a great discovery that he has made, viz., that the women bathers at that resort are employing rubber corsets, made, as he describes them, of two sheets of rubber with pieces of whalebone between. He says that the whalebones are taken direct from the local whaling wharves, and he appears to think that this is entirely a local industry; but in this he is in error, because these rubber corsets for particular ladies came on the market a year ago and are to be had at nearly all the large city stores as well as at the seaside emporiums. The sale of this particular article has not yet assumed vast proportions, but it is growing.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

STEEL PLATES TO PREVENT PUNCTURES.

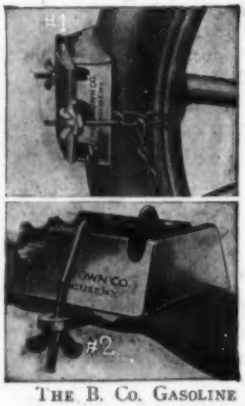
A puncture proof tire is something that every motorist wants. Of that there can be no doubt. There are many tires so named, but unfortunately a good many of them, notwithstanding this designation, will puncture. Here is an illustration of a tire of English construction, in which, in a very thick layer of rubber and cotton—or rather a series of such layers—coming immediately under the tread, small steel plates are inserted in such a way that, while they do not touch, they overlap, making it impossible for a nail or tack to get through them. The manu-

A PUNCTURE PROOF TIRE.

facturers claim that on a trial of 54 of these tires on vans which, with their load, weighed nearly three tons, the average distance covered by the tires, without a puncture or road stop of any kind, was a little over 6,000 miles. (Non-Puncture Inner Case Syndicate, Ltd., Kensington, England.)

A LIGHT, INEXPENSIVE VULCANIZER.

To repair a tire so that it will stay repaired it has been found necessary in most cases to use a vulcanizer; and the light and inexpensive vulcanizer which can be quickly and easily used has come to be in great demand. Here are two illustrations of the "B. Co. Gasoline Vulcanizer." It weighs only 3 pounds and can be tucked away in the tool-box. It is quite simple, consisting only of the body, the cover, measuring cup and two clamping fixtures. Cut No. 1 shows this vulcanizer at work on the outer shoe, where it is used perpendicularly, being clamped around the tire and rim with a chain. In this position it is necessary to pour the gasoline into the little cup before it is ignited. In cut No. 2 the vulcanizer is shown in a horizontal position as it is used on an inner tube. In that case the cover is put under the tube so as to press the place to be repaired up against the body of the vulcanizer. When used in this way the gasoline is simply poured into the body and ignited. It will be noticed that in the body of the vulcanizer there are a number of upright iron rods, which serve to absorb and distribute the heat and carry it down to the rubber. [The Brown Co., Syracuse, New York.]



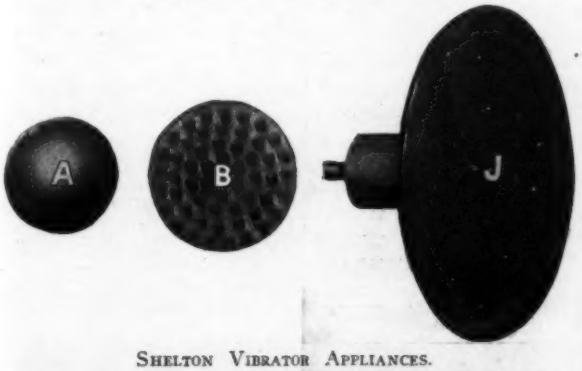
THE B. CO. GASOLINE VULCANIZER.

A WAX FOR INSULATING WIRE.

An English firm is introducing a new wax for insulating and impregnating cables and wires. It apparently has no rubber in it, but it is described as being a "rubber-like product," resistant to weather and to water, and also to acids, and with a high electrical resistance. This compound can be vulcanized and can be melted at 75 deg. C., but is not sticky in hot weather nor brittle in cold.

RUBBER TO START CIRCULATION.

A hundred years ago when a doctor got a new patient he proceeded immediately to cup him, and the more blood he could draw the greater doctor he was. Fortunately our ancestors were fairly hardy and quite a number of them survived this treatment. Then came the era of drugs, and thousands of worthy citizens were dosed to death. But matters are improving, and now it is a very general opinion that the less we have to do with pills, powders and serums and the more we rely upon the forces of nature, the more likely we are to enjoy good health. Among the natural contributions to health now generally recognized is a proper amount of exercise; and under this heading comes massage. The value of massage has been recognized for many years, but its application has only been perfected within the last few years—since the invention of electrical appliances by which the patient could give himself massage, or at least could get it through the aid of his friends, without calling in experts. The accompanying picture of a case, with its contents, shows a massage outfit which can be used by connecting the little motor with the ordinary electric lighting current. It contains various appliances, made of either hard or soft rubber, three of which are shown more in detail, viz.: the cut marked "A," which is a hard rubber ball applicator, to be used where deep vibration is required; the disc marked "B," which is a soft rubber brush applicator used for scalp and spinal treatment, and the large disc, "J," which is a hard rubber applicator used in abdominal treatment. While this outfit can be used by the patient himself, it is also popular among the doctors for use in their practice. [Shelton Electric Co., 4 East Forty-second street, New York.]



SHELTON VIBRATOR APPLIANCES.

A COAT THAT WILL FLOAT A HALF-DOZEN MEN.

A coat, which is described as looking like any ordinary Norfolk, and which is made of khaki in brown or blue, lined with some sort of fibrous material much lighter than cork, is alleged by its manufacturers to be so buoyant that it will sustain in the water a dead weight of 21 pounds—which is enough to hold up several men. Its description does not indicate that any rubber is used in the coat, but it is an interesting article and is vouched for by a number of reputable people,—State quarter-masters and other officials. It is made by the American Life Saving Garment Co., 53 State street, Boston, Massachusetts.

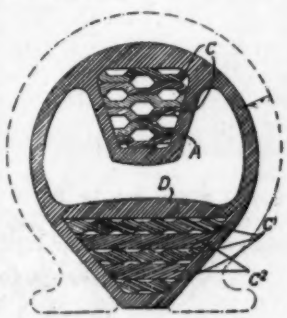
A FIRM SUPPORT FOR WEAK ANKLES.

Probably the noble red man who ranged the primeval forests was not greatly troubled with weak ankles or falling arches, but our vaunted civilization has brought with it both of these troubles, and a great many people find it extremely difficult to get about without some artificial support. A New England manufacturing concern has contributed to the comfort of weak-ankled people by making the ankle support shown in this illustration. The front of it consists of seamless rubber, and the back is of elastic construction, sufficiently strong to give the ankle firm support. This same support serves equally well for fallen arches. [H. J. Collis Manufacturing Co., Taunton, Massachusetts.]

THE COLLIS ANKLE AND ARCH SUPPORT.

A PNEUMATIC THAT WORKS WHEN DEFLATED.

A Frenchman has invented a pneumatic tire—cut of which is here shown—which is designed to work, at least comfortably well, even when it is entirely deflated. In addition to the air chamber, which is of peculiar shape—shown by the white space in the center of the cut—there is an upper chamber (A) and a lower chamber (D) which are packed with elastic strips (C). While of course the tire is intended to be inflated, if a puncture should occur it would be possible, according to the inventor's idea, to get along without discomfort on the resiliency imparted to the tire by these two bodies of elastic strips.



A SLEEVE FOR INNER TUBES.

The accompanying illustration shows an inner tire sleeve made of heavy chrome leather with strong metal buttons along one edge, and a corresponding series of button-holes along the other, with an inside flap. Each sleeve has two rows of button-holes, so as to fit two different sizes of tires. The sleeves come in two lengths, 10 and 15 inches, or can be made any other length if so desired. [The Leather Tire Goods Co., Niagara Falls, New York.]

PROTECTING THE EAR IN TARGET PRACTICE.

There is something very fine and heroic in firing off these enormous 10-inch, 12-inch and 14-inch guns that carry their missiles so accurately five, six and even eight miles. But it is terrifically hard on the ears of the gunners; in fact many of them have been made deaf for life by the awful concussion. A simple little protector has been devised, consisting of a celluloid tube on which there are two rubber discs, the whole being small enough to insert in the ear, over the drum. A peculiarity of this device is that, while it enables the wearer to hear ordinary conversation without difficulty, it is a perfect protection against injury from the concussion made by the discharge of these enormous guns.

News of the American Rubber Trade.

THE DERBY PEOPLE HAVE AN OUTING.

THE annual outing given for the employes of The Derby Rubber Co. was held on July 5 at Morris Cove, near Lighthouse Point, Connecticut. They were taken by special car to the grove, a ride of about an hour and a half through the Connecticut hills. There were athletic contests, handsome prizes being awarded the winners, and after an hour of salt water bathing the men sat down to a shore dinner. After-dinner speeches were made by General Manager P. B. Price and others. In the afternoon a baseball game was played which lasted until time to return.

Mr. A. W. Paige, president of the company, attended the outing and took part in the sports.

THE WORK OF THE FORSYTH DENTAL INFIRMARY.

The Forsyth Dental Infirmary for children, recently established in Boston by Thomas Alexander Forsyth and John Hamilton Forsyth as a memorial to James Bennett Forsyth and George Henry Forsyth, has already been extensively described and also illustrated in this publication. A recent article by a Boston doctor in the "Boston Medical and Surgical Journal" calls attention to the enormous field which this institution is bound to fill. An examination of 118,000 school children in Boston showed that over 51,000 of them had defective teeth. This Infirmary will be able to take care of this entire number and even more, for it will have a maximum equipment of 106 chairs and it is estimated that 12 patients a day can be cared for in each chair. Assuming that each child receives three treatments a year, over 76,000 children can be cared for in this great charitable institution.

OFFICIALS OF REPUBLIC RUBBER CO. ENTERTAINED.

On Monday evening, July 14, some thirty-six branch managers, officials and department heads of the Republic Rubber Co., were entertained by President Thomas L. Robinson at the Country Club, Youngstown, Ohio. Among those present were: T. L. Robinson, president; L. T. Petersen, first vice-president; J. H. Kelly, second vice-president and general sales manager; A. H. Harris, superintendent; C. F. Garrison, secretary, and M. I. Arms 2nd, treasurer.

In the course of the social session which followed the dinner, there was some excellent speaking. All the branch managers reported splendid business and were enthusiastic as to prospects of "Quality Tires."

THE RUBBER CLUB OF AMERICA HAS PERMANENT OFFICE.

In accordance with the recommendation of the Executive Committee and the approval of the directors, a permanent office of the Rubber Club of America has been established at 354 Fourth avenue, New York, occupying a portion of the offices of the Silk Association of America. This new office will hereafter be the center of the activities of the Rubber Club and is in charge of Mr. E. S. Vorhis, who has been appointed Club Secretary. It is expected that with these new facilities the work of the Rubber Club will be broadened and extended and will become an instrument of great usefulness and benefit to its members and the trade at large.

INSTALLING GENERAL ELECTRIC CO. MOTORS.

The installation of new machinery in the Fisk Rubber Co.'s works at Chicopee Falls, Massachusetts, will include a 150 h. p. motor, two 400 h. p. motors and switchboard apparatus, ordered from the General Electric Co. This company is doing an enormous business in the way of installing its motors in all sorts of industrial institutions—cement companies, biscuit companies, printing concerns, soap factories—all over the country, as well as in the power plants of a great many railroads.

STATEMENT OF THE UNITED STATES TIRE CO.

The United States Tire Co., incorporated under the laws of New York, has filed with the Massachusetts secretary of state a statement of its financial condition, dated May 28, 1913. A comparison is shown below of this statement and that made by the company in 1912:

Assets.	May 28, 1913.	March 1, 1912.
Real estate	.....	$41,784
Real estate and investment	$330,475	....
Machinery, fixtures, etc	.....	120,183
Material, stock in process and equipment	9,395,452	2,981,686
Cash and debts receivable	4,193,728	2,535,540
Total	$13,919,655	$5,679,193
Liabilities:		
Capital stock	$500,000	$500,000
Accounts payable	12,925,512	5,148,785
Surplus, reserve	494,143	30,408
Total	$13,919,655	$5,679,193

OFFICIALS OF THE REPUBLIC RUBBER CO.

A new and most favorable connection has been made by William H. Scheel, of 159 Maiden lane, New York, with the Societé des Blancs de Zinc de la Mediterranée, noted producers of zinc oxide. This step is due to increased calls that Mr. Scheel has had for these goods, which are especially adapted for the use of tire manufacturers, many of whom have already substantially testified their appreciation of this particular brand of oxide.

In arranging to care for the increased business anticipated for the coming fall, the Monatiquot Rubber Works Co., of South Braintree, Massachusetts, has increased its power equipment by the installation of another boiler, and its plant by the addition of a new boiler house. This company manufactures Naturized rubber, a product so much in demand by the trade as to necessitate the day and night operation of its factory.

The Firestone Tire and Rubber Co. is offering to its dealers, free of charge, imprinted metal or muslin road signs. This enables the dealer to mark all the highways leading into his town, and the motorist in need of a tire or other sundry is thus directed right to the dealer's door—which incidentally gives the dealer a fine type of free advertising.

The Danversport Rubber Co. has recently changed its Boston offices to 79 Milk street, where it is most favorably located. Under the direction of J. C. Walton, president and treasurer, this company has made material progress.

H. L. Alperin, 45 W. Canton street, Boston, has developed an extensive business in waste rubber and is now among the important operators in that city.

The Rubber Step Manufacturing Co., Exeter, New Hampshire, which makes a line of specialties on order for the trade, has added to its output a line of molded specialties, this new department being under the management of William F. Stearns, a rubber man of wide and successful experience.

The Walpole Tire and Rubber Co., of Walpole, Massachusetts, at a recent meeting of its directors, decided to defer the quarterly payment of 1¾ per cent. on its preferred stock, and passed the usual quarterly dividend of 1 per cent. on its common stock. This action is attributed to the recent failure of the Atlantic National Bank of Providence, which has interfered temporarily with the company's plans for financing the large increase of business that has recently come to it. The company has sent out a circular to its stockholders in which the following paragraph appears:

"Your company has had an unusual increase in the amount of business tendered to it and this expansion we have found extremely hard to finance, owing to the small available working capital the company now has on hand. The issue of notes which was recently offered to the stockholders to provide an adequate working capital, which would place the company in an independent position as regards its bank loans, did not meet with the success anticipated. This is one of the reasons for our feeling that it is to the company's best interest to retain at the present time all of its cash in hand."

Telling the news is all right, provided it is correct. An instance of mistaking shadow for substance has recently occurred, in the printing by the daily press of a report to the effect that the Hood Rubber Co. had decided to discontinue the manufacture of tires and had closed out its entire stock. Tho the report did not appear in this journal, THE INDIA RUBBER WORLD is authorized to contradict it.

A BUSINESS FIRM IN A LATIN-AMERICAN country informs an American consulate that it desires to be put in touch with American manufacturers of raincoats. The report is No. 11083.

Mr. D. A. Cutler is now associated with the Acushnet Process Co. of New Bedford, Massachusetts, and has become an active member of that corporation.

The Standard Woven Fabric Co., formerly located at Worcester, is now established in its new factory at Framingham, Massachusetts, where, with every facility and equipment tending to promote quality and economy of production, it will be able to serve the trade on a much larger scale with not only the brake lining, woven belting and hose fabrics to which its attention has in the past been directed, but also with a complete line of woven fabrics for mechanical purposes.

A SANITARY "SWATTER."

A Sanitary Insect Destroyer is one of the latest inventions in which is embodied the use of rubber; and we illustrate herewith such an article—manufactured by the Rubber Step Manufacturing Co., of Exeter, New Hampshire—which is sure to meet with appreciation because of the effective manner in which it disposes of flies, mosquitoes and other of the insect pests of the summer months. A fly-swatter has become now almost a household necessity, and this particular style—the rubber edge of which is of sufficient weight that a severe blow can be dealt—includes among its features of special merit a flexible handle which can be detached from the regular wooden member, making it possible to wash the destroyer in hot water or antiseptic solution. The "swatter" is protected by patents issued during this year in the United States and Canada.

PNEUMATIC TIRES MADE OF HORSEHAIR.

A thousand people of all nationalities are working all the time on some substitute for the pneumatic tire now in general use. A couple of Frenchmen have hit on something different from the rest. They have taken out a patent for a resilient tire to be made of sheets or bands of compressed horsehair wound around a core; this core may be either solid or hollow metal, or it may be a rubber air chamber, or may consist of still more compressed horsehair. There may be few or many layers of horsehair, an outside cover being made of canvas; but the body of the tire is to be of horsehair, and it is from that article that its resiliency is to come.

This is certainly adding insult to injury; not only is the poor old horse driven out of his job by the motor car, but his mane and tail are to be plucked to constitute the tires. Why not go a few steps further and make the rims out of compressed horsehoofs, and the spokes out of his ribs, and upholster the car with the poor old fellow's hide?

A number of new general specifications are now being issued by the United States Navy Department, superseding those hitherto in force. The first instalment of these has come to hand and will be dealt with in the next issue.

MILLER STOCK TO BE INCREASED TO $2,000,000.

It has been decided by the stockholders of the Miller Rubber Co., Akron, Ohio, to increase the stock from $1,000,000 to $2,000,000; $500,000 to be 7 per cent. cumulative preferred stock, which is to be sold at once to raise funds to take care of the rapidly increasing business, and $500,000 to be common stock which is to be placed in the treasury for future disposition.

SUPERINTENDENTS OF THE CANADIAN CONSOLIDATED.

The picture shown below was taken at the convention of the superintendents of the Canadian Consolidated Rubber Co., Limited, which was held recently at the factory of the Granby Rubber Co., Limited, Granby, Quebec. From left to right they are as follows: D. A. Fisher, superintendent of the Canadian Rubber Co., Montreal; A. D. Weber, sales department, Canadian Consolidated Rubber Co., Montreal; John H. Pearce, Sr., general superintendent of the same company; Walter R. Legge, secretary-treasurer of the Granby Rubber Co.; P. Y. Smiley, superintendent of the Merchants Rubber Co., Berlin, Ontario;

SUPERINTENDENTS OF THE CANADIAN CONSOLIDATED RUBBER CO., LIMITED.

C. K. Hutchinson, Canadian Consolidated; F. W. Kramer, superintendent of the Dominion Rubber Co., St. Jerome, Quebec; John H. Pearce, Jr., superintendent of the Granby Company; I. W. Kuehner, superintendent of the Maple Leaf Rubber Co., Port Dalhousie, Ontario; F. R. Fogerty, superintendent of the Granby Last Factory, and C. S. Johnson, of the Granby company.

These conventions are held monthly at the various mills of the Canadian Consolidated Rubber Co., Limited, and are of undoubted benefit to the superintendents of the factories.

DIVIDENDS PAID BY RUBBER COMPANIES.

The Hood Rubber Co., Watertown, Massachusetts, has declared a quarterly dividend of 1¾ per cent. on its preferred stock, payable August 1 to stock of record on July 31.

The Firestone Tire and Rubber Co., of Akron, Ohio, paid on July 15 the usual quarterly dividend of 2½ per cent. on its common and 1¾ per cent. on its preferred stock.

The Lee Tire and Rubber Co., Conshohocken, Pennsylvania, paid on July 10 its regular quarterly dividend of 1¾ per cent.

The Batavia Rubber Co., of Batavia, New York, has declared the regular quarterly dividend of 1½ per cent. on its preferred and 1 per cent. regular on its common, with ½ per cent. additional on the common.

The United States Rubber Co. paid on July 31 a quarterly dividend of 2 per cent. on its first preferred stock and a quarterly dividend of 1½ per cent. on its common stock.

TRADE NEWS NOTES.

In the competition between Newark, Columbus and Chillicothe, Ohio, as a site for the new plant of the Pharis Tire and Rubber Co., of Columbus, Ohio, the first named city has been selected as offering the greatest advantages, and it is soon to have a tire factory equipped at a cost approximating $30,000.

The Vulcan Rubber Co., of Erie, Pennsylvania, which has been incorporated for $200,000, and which has been engaged in the manufacture of rubber goods and inner tubes, is now to take up on a large scale the manufacture of tires for commercial vehicles. These tires are to follow a design made by C. A. Swinehart, the new general manager, who, with H. F. Burger, has recently purchased an interest in the company. Both Mr. Swinehart and Mr. Burger were formerly connected with the Swinehart Tire and Rubber Co., of Akron, Ohio, the former for several years, in the capacity of sales manager.

The Goodyear Manufacturing Raincoat Co., of New York City, recently incorporated with a capital stock of $100,000, expects to secure a plant—probably in New Jersey—in which to manufacture raincoats. The incorporators are F. D. Clayton and David Gross, of Englishtown, New Jersey, and William Schor, of New York City.

Reid Brothers, of Seattle, Washington, have been appointed Pacific Coast representatives of The Gordon Rubber Co., of Canton, Ohio.

Diamond and Goodrich tires are to be mutually represented in Pittsburgh, at 414 North Craig street, by The Diamond-Goodrich Pittsburgh branch, under the management of C. A. Dunham, who has for some time been manager of the agency formerly devoted exclusively to the Diamond Rubber Co.'s product.

A service plant, where tire, rim and wheel changes can be made on automobiles and trucks, is being erected for the Firestone Tire and Rubber Co. at Sixty-third street and West End avenue, New York.

The Monarch Rubber and Oil Cloth Co. has moved to the Drexel Building, Philadelphia, a better and more suitable location than that previously occupied at 41 North Seventh street.

The Motz Tire and Rubber Co., Boston, Massachusetts, has moved to 669 Boylston street from its former place of business at 4 Dundee street.

1084 Boylston street is the present Boston address of the Ajax-Grieb Rubber Co., located until recently at 15 Park square.

The Goodyear Tire and Rubber Co., of Akron, Ohio, has completed arrangements by which its product is to be distributed throughout Northwestern Russia, Messrs. Sorge & Sabeck, of Riga, having taken the agency for that city, as well as the management of the St. Petersburg agency recently opened by the Goodyear company.

A rubber manufacturing plant is to be established at Joplin, Missouri, by the Independent Rubber Co. lately incorporated in that city by J. L. and J. H. Coesir and B. H. and F. A. Wilbur. The capital stock of this new company is $10,000.

The Brookville Rubber Co., of Trenton, New Jersey—incorporated on June 12, under the laws of that State, with an authorized capital of $100,000, of which $35,000 has been paid in—has taken over the plant formerly operated by the Elwell Rubber Co., where it will manufacture, in addition to various lines of mechanical rubber goods for jobbers, a line of rubber soles and heels for the shoe trade. This latter will be the company's specialty, and will be disposed of directly to the manufacturers. The officers of the company are: Ezra Evans, president; Edward A. Fischer, secretary and treasurer, and Charles A. Joslin, general manager.

PERSONAL MENTION.

E. J. McMartin has been appointed manager of the Butte, Montana, branch of the Fisk Rubber Co., with the Minneapolis branch of which he was formerly connected.

J. G. Goudie is now in charge of the Detroit office of the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, and is to cover for that company the states of Michigan and Ohio. Mr. Goudie has been for some time manager of the Diamond Rubber Co.'s Detroit branch.

Charles White has been promoted to the position of manager of the Detroit house of the Firestone Tire and Rubber Co., from a similar position in its office at Syracuse, New York.

J. S. Sleeper, who has recently become sales manager of the Colonial Printing Co., of Cleveland, Ohio, was formerly connected with the Firestone Tire and Rubber Co., as advertising manager.

W. A. Earley has been made manager of the Pittsburgh branch of the Motz Tire & Rubber Co., of Akron, Ohio.

J. J. Moriarty, at one time engaged in laboratory work in the plant of The B. F. Goodrich Co., later in the employ of the Pennsylvania Rubber Co. as assistant superintendent of its plant at Jeannette, Pennsylvania, and since that time general superintendent of the Canadian factory of the Goodyear Tire and Rubber Co., has lately been made superintendent of the factory of the Frontier Tire and Rubber Co., of Buffalo, New York.

Mr. M. B. Fetcher, formerly connected with the Maxwell Motor Co., has been engaged by the Findeisen & Kropf Manufacturing Co., makers of the Rayfield Carburetor, as manager of its branch recently moved to 1211 Woodward avenue, Detroit, Michigan.

Mr. Charles E. Wood, who for many years was connected with the New York Commercial Co., but now in the crude rubber business for himself at 26 Stone street, New York City, has taken the selling agency for The Derby Rubber Co. Mr. Wood will handle all of its several grades of reclaimed rubber in the West, as well as in New York and vicinity.

MR. W. E. BARKER'S EUROPEAN TRIP.

Mr. W. E. Barker, manager of sales of the United States Rubber Co., left for Europe on July 26, by the "Prinz Friedrich Wilhelm." During his trip he will visit Continental Europe and Great Britain, combining business with pleasure. He expects to return about the middle of September.

VACATION SCHEDULE OF UNITED STATES RUBBER CO.'S OFFICIALS.

The vacation schedule of the officials of the United States Rubber Co. is as follows:

Colonel S. P. Colt, president, is spending his vacation at Bristol, R. I., and later may take a short trip to Europe. Mr. James B. Ford, vice-president, will be yachting most of the time. Mr. Homer E. Sawyer, general manager of footwear business, after passing some time at Easthampton, expects to spend August at the Mount Washington, Bretton Woods, New Hampshire. Mr. W. E. Barker, manager of sales, has gone to Europe. Messrs. Palmer and Hichborn have sailed for Panama. Mr. Lester Leland, second vice-president, will remain for most of his vacation at Manchester-by-the-Sea. Mr. W. S. Ballou, director, is spending the time in Europe.

Mr. W. G. Parsons, treasurer, is commuting from Greenwich, Connecticut. Mr. S. Norris, secretary, expects to pass his vacation at Newport, Rhode Island, and to enjoy some automobile tours. Mr. N. Myers, counsel of the company, will take a trip to Europe, while Mr. John D. Carberry, assistant secretary, intends to do some automobile touring and to spend a short holiday in Vermont.

THE MYSTIC RUBBER CO.

The Mystic Rubber Co., with offices and factory at West Medford, Massachusetts, manufacturing high grade rubber sheeting for hospitals, dress shields and novelties, besides doing a large business in rubberizing of clothing, auto tops and ducking, reports a very satisfactory business and a steady and increasing demand for its product. The plant of this company, illustrated herewith, is located on the Mystic River,

PLANT OF THE MYSTIC RUBBER CO.

a short distance from Boston, and is possessed of splendid shipping facilities. This is one of the newer companies in the rubber industry, and it is well organized, its equipment is strictly up to date, and its management thoroughly efficient. It is a Massachusetts corporation, the officers of which are: Herman T. Dean, president; William B. Marshall, treasurer, and Herbert A. Derry, managing director.

FEDERAL RUBBER MFG. CO. AND BABY-CARRIAGE TIRES.

Baby-carriage tires to the amount of 8,900,000 feet—a quantity sufficient to equip about 875,000 infant vehicles—have been sold by The Federal Rubber Mfg. Co., of Milwaukee, thus far this year, a period of less than seven months; in addition to which it is stated by an officer of the company that it will produce 1,000,000 pneumatic tires.

THE STAR RUBBER COMPANY.

Having decided to sell only the jobbing trade, the Star Rubber Co., of Akron, has just reorganized its arrangements. W. W. Smith, formerly with the Firestone Tire and Rubber Co. and the Faultless Rubber Co., is the new manager of sales; the Eastern representative being Howard H. McGee, previously with the Seamless Rubber Co., the Davol Rubber Co. and the Ajax-Grieb Rubber Co. This firm makes a complete line of rubber druggists' sundries, having one of the most complete plants in that branch. George Clark has been appointed superintendent of the factory.

THE MADERO BROTHERS INCORPORATE.

Ernesto and Salvador Madero, brothers of the late President of Mexico, Francesco I. Madero, have incorporated under the laws of the State of New York, in the name of Madero Brothers, Incorporated. They intend to do a general commission, export and import business with Mexico, and will act as selling agents of the Madero guayule rubber interests there. They do not intend to take any part whatever in Mexican politics, which is not at all to be wondered at in view of the unhappy fate of their distinguished brother.

FIRE DEPARTMENT ANNUAL REPORT FOR 1912.

Among the features of the 1912 report of the New York City fire department is the statement that there is an urgent need for the replacement of fire hose. The total shortage in various sizes was 178,200 feet, the estimated cost of replacing which would be $202,370. The total purchases for 1912 represented 109,210 feet.

THE EUREKA'S NEW AGENT ON THE PACIFIC COAST.

The Eureka Fire Hose Manufacturing Co. has appointed Mr. W. S. Harley as its agent for fire department hose in the states of Montana, Oregon, Idaho and Washington, with offices in the Paulsen Building, Spokane, Washington.

NEW INCORPORATIONS.

The Askam Rubber Co., June 18, 1913; under the laws of Connecticut; authorized capital, $30,000. Incorporators: I. W. S. Hawes, William F. and Lerdy Askam.

Otto Braunworth, Inc., July 23, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Albert Bracht, 751 East 229th street; Louis A. and Otto Braunworth—both of 3013 Kingsbridge Terrace, New York. Location of principal office, New York. To deal in rubber, etc.

Brookville Rubber Co., June 12, 1913; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Edward A. Fischer, Ezra Evans and Charles A. Joslin—all of Trenton, New Jersey. To manufacture, purchase and sell all kinds of mechanical rubber goods.

The Canton Tire Saver Co., April 8, 1913; under the laws of Ohio; authorized capital, $25,000. Incorporators: J. A. and A. H. Calhoun and A. H. Wilson. To manufacture and sell a liquid preparation used in automobile tires to prevent and stop punctures, etc.

Carlton Raincoat Co., Inc., July 7, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: John E. Mellon, 1011 East One Hundred and Seventy-eighth street, New York; Jacob H. Lampert and Otto Will, both of 1894 Lexington avenue, New York. Location of principal office, New York.

The Club Scrap Rubber and Tire Co., June 23, 1913; under the laws of New York; authorized capital, $2,500. Incorporators: Harry Dolkart, 210 Henry street; Abraham Kalbalkin, 318 East Thirteenth street, and William Adinoff, 69 East One Hundred and Eleventh street—all of New York.

The Diamond Rubber Co., April 28, 1913; under the laws of Ohio; authorized capital, $10,000. Incorporators: A. H. Marks, O. C. Barber and Guy E. Norwood. To manufacture, buy, sell and deal in and with rubber and rubber goods, etc.

Essenkay Products Co., May 28, 1913; under the laws of Illinois; authorized capital, $10,000. Incorporators: Franc D. Mayer, William L. Weber, and William R. Russell. To manufacture rubber and rubber compounds.

Eureka Tire Co., June 18, 1913; under the laws of New Jersey; authorized capital, $100,000. Incorporators: John E., Peter D. and Frank W. Thropp—all of Trenton, New Jersey. To control patents covering a special method of tire manufacture, with the intention of leasing to mills now making tires the right to use this patented method.

Goodyear Manufacturing Raincoat Co., Inc., June 25, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: F. D. Clayton, David Gross—both of Englishtown, New Jersey, and William Schor, 15 East Sixteenth street, New York. Location of principal office, New York.

Hubmark Rubber Co., June 23, 1913; under the laws of Michigan; authorized capital, $25,000. Incorporators: Henry B. Hubbard, 1540 Seventy-second street, Brooklyn, New York; George H. Mayo, Brookline, Massachusetts, and William E. Barker, 366 Sanford avenue, Flushing, New York. Location of principal office, Detroit, Michigan. To purchase, sell and deal in rubber goods and footwear of all kinds, etc.

Independent Rubber Co., June 23, 1913; under the laws of Missouri; authorized capital, $10,000. Incorporators: John L. and James Coesir, and Arthur James—all of Joplin, Missouri. Location of principal office, Joplin, Missouri. To manufacture, repair, buy and sell automobile tires, tubes, etc.

Johnstown Rubber Co., June 5, 1913; under the laws of Pennsylvania; authorized capital, $25,000. Incorporators: Nelson MacReynolds, Thomas Y. Brent, and A. C. Simler—all of Johnstown, Pennsylvania. Location of principal office, Johnstown, Pennsylvania. To devulcanize and refine rubber, and to manufacture articles and merchandise.

Keaton Patents Co., Inc., June 14, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: H. O. Coughlan, Joseph F. Curter, and J. R. Nevin—all of 34 Nassau street, New York. To carry on a tire business.

S. A. Levine & Co., Inc., June 25, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Samuel A. and Augusta Levine—both of Lawrence street, Spring Valley, New York, and Joseph Levine, 625 Hendrix street, Brooklyn, New York. Location of principal office, New York. To deal in raincoats and other rubberized goods.

The National Rubber Co., July 14, 1913; under the laws of Delaware; authorized capital, $2,500,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania, George H. B. Martin, Camden, New Jersey, and G. U. Martin, Philadelphia, Pennsylvania. To manufacture and deal in automobiles, cars, wagons, boats, etc., together with their equipments.

Presto Garter Manufacturing Co., Inc., July 7, 1913; under the laws of New York; authorized capital, $3,000. Incorporators: Maurice Berkowitz, 822 Beck street, Harry Troupiansky, and Jacob Trow—both of 101 Chrystie street, New York.

The Puncturement Co., April 24, 1913; under the laws of Ohio; authorized capital, $1,000. Location of principal office, Cleveland, Ohio. To manufacture and deal in all articles to be used in connection with automobiles.

The Reliable Puncture Seal Co., May 26, 1913; under the laws of Ohio; authorized capital, $25,000. Location of principal office, Canton, Ohio. To manufacture and market motor vehicle accessories.

Ten Broeck Tire Co., June 18, 1913; under the laws of Delaware; authorized capital, $250,000. Incorporators: S. S. Adams, Jr., John B. Gray, and M. B. F. Hawkins—all of Wilmington, Delaware. To manufacture automobile tires, tubes, etc.

The Tire Place, Inc., July 2, 1913; under the laws of Delaware; authorized capital, $100,000. Incorporators: John G. Hughs, Haddonfield, New Jersey; Harry Fisher, Philadelphia, Pennsylvania, and Harry W. Davis, Wilmington, Delaware. To carry on business of manufacturing, dealing in automobile tires and fitting parts and sundries.

Trautman Corporation, July 14, 1913; under the laws of New York; authorized capital, $1,000. Incorporators: Evelyn M. Trautman, 191 Park Place, Florence A. Webb, 227 Flatbush avenue, and Charles Colsten, 903 Sixteenth street—all of Brooklyn, New York. Location of principal office, Brooklyn, New York. To carry on auto tire business.

Triumphant Tire Society, Inc., May 27, 1913; under the laws of New York; authorized capital, $500. Incorporators: Elbert R. De Tamble, Nyack, New York; Louise Bennett, 216 West 127th street, New York, and Esther A. Swanson, Kenilworth, New Jersey. Location of principal office, Manhattan. To manufacture and deal in rubber goods, tires, etc.

Vacuum Tire Corporation, July 17, 1913; under the laws of New York; authorized capital, $50,000. Incorporators: Williard J. Woodcock, 102 Gates avenue, Charles G. Ross, 66 Hancock street, Frederick L. B. Gartner, 150 Classon avenue—all of Brooklyn, New York. Location of principal office, Brooklyn, New York. To manufacture and deal in auto tires and accessories.

TRADE NEWS NOTES.

A new building 226 x 80 feet, and 4 stories high, with a floor space of nearly 74,000 square feet, is being added to the plant of the Continental Rubber Works at Erie, Pennsylvania.

The Electric Hose and Rubber Co., of Wilmington, Delaware, has arranged for the opening of a new store at Chicago.

A new factory, with floor space of 10,000 square feet, is being erected at Seattle, Washington, by the Goodyear Tire and Rubber Co., of Akron, Ohio.

The Spokane Stamp Works, of Spokane, Washington, has recently purchased the entire plant and business of the Phoenix Stamp Works of that city, which had been in continuous operation in the manufacture of rubber stamps for 25 years. The Spokane Stamp Works has now the greatest capacity of any concern of its kind in that section of country.

Work has been started on a new four-story addition—intended for office and warehouse use—to the plant of the C. Roberts Rubber Co., New street, Newark, New Jersey. It is estimated that this addition will cost $27,000, and it will occupy a space of 50 x 100 feet.

A four-story concrete building, 50 x 200 feet, is being erected by The La Crosse Rubber Mills Co., of La Crosse, Wisconsin, as an addition to its present plant. This extra space will enable the company to increase its production of rubber boots and shoes very materially.

The stockholders of the Columbiana Rubber Co., of Youngstown, Ohio, recently voted an increase of the capital stock of that company, the additional capital being intended for use in the enlargement of the plant and for the purchase of new machinery. Papers have been filed by the company increasing the capital stock to $400,000, the former capitalization having been $100,000.

Brandt Bros., Indianapolis agents for Lozier and Chandler automobiles, have taken the agency for that city of Braender tires.

Plans have been prepared for a 32 x 224 feet addition to the plant of The Electric Hose and Rubber Co., at Wilmington, Delaware. This addition—which will enable the company to increase its output by about 25 per cent.—is to be of brick construction, two stories high.

The John A. Roebling's Sons Co., which includes among its manufactures large quantities of rubber insulated wire, has contracted for a new brick and steel building, 65 x 208 feet, to be added to its wire mill at Dollar Bay, Wisconsin.

A Massachusetts branch, intended to supply the Eastern manufacturers with their requirements in the way of cement, has been established by the St. Louis Rubber Cement Co., at 652 Summer street, West Lynn.

The new Philadelphia agency of the Hardman Tire and Rubber Co., of New York, is to be carried on under the management of J. A. McTaggart, with location at 1923 Sansom street.

Gutta Percha and Rubber Limited, formerly the Gutta Percha and Rubber Manufacturing Company, of Toronto, Limited, has just completed, and is now occupying another substantial addition to its factory group in the Parkdale section of the city. This is a six-story and basement building, 170 x 50 feet, with a one-story wing, giving a floor area of 60,000 square feet. The building is of reinforced concrete throughout with fire-proof doors, steel sashes, etc., and is equipped with all modern conveniences. The greater part of the newly acquired space is devoted to the increased production of Maltese Cross rubber footwear and Maltese Cross automobile tires.

A new Canadian company known as the Sterling Rubber Co., Ltd., is now manufacturing a line of drug sundries at Guelph, Canada. F. S. Friedman is the secretary and treasurer of the company.

A HANDSOME PENNSYLVANIA PANEL.

The world will never tire of handsome pictures, and many astute advertisers have taken advantage of this unescapable fact. The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, has recently sent out to its customers a striking panel 15 inches wide and 40 inches long, showing the full length figure of a thoroughly modern young woman. She is evidently dressed for the opera or some other gala occasion, and she is quite dazzling in costume and millinery, with an opera cloak which the average woman would undoubtedly describe as "a dream," but to the hapless male who had to pay for it would doubtless prove a stern reality. The picture is lithographed in ten or twelve colors on heavy paper embossed so as to have the effect of canvas. It is a thoroughly artistic piece of work. The panel is entitled "Vecelia," a name derived from "V. C.," the trade mark of the Vacuum Cup Tires made by the company. "Vecelia" is a companion piece to "Jeannette," a striking panel sent out by the company a little while ago, showing the vacation girl sitting in her canoe. Both of these pictures were painted specially for the Pennsylvania Rubber Co. by the well-known artist, C. Everett Johnson.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of April, 1913, and for the first ten months of five fiscal years, beginning July 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
April, 1913.....	$188,529	$88,539	$655,466	$932,534
July-March	1,966,639	1,178,268	6,194,003	9,338,910
Total, 1912-13....	$2,155,168	$1,266,807	$6,849,469	$10,271,444
Total, 1911-12....	1,918,285	1,323,060	5,984,379	9,225,724
Total, 1910-11....	1,742,683	1,894,282	5,198,295	8,835,260
Total, 1909-10....	1,580,088	1,593,696	4,082,427	7,256,211
Total, 1908-09....	1,225,882	1,139,271	3,165,096	5,530,249

The above heading "All Other Rubber," for the month of April, 1913, and for the first ten months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
April, 1913.....	$305,362	$48,275	$353,637
July-March	2,809,917	445,826	3,255,743
Total, 1912-13.....	$3,115,279	$494,101	$3,609,380
Total, 1911-12.....	2,063,603	467,290	2,530,893
Total, 1910-11.....	1,528,136	479,213	2,007,349

The India Rubber Trade in Great Britain.

(By Our Regular Correspondent.)

THE FALL IN PRICE OF RUBBER.

THIS topic continues an all-absorbing one, though it affects the peace of mind of the manufacturer less than it does that of the plantation shareholder. Now that best plantation brands have fallen appreciably under 3s. per pound, the opinions of those who predicted 3s. as the limit for this year have been falsified, and there is little disposition in the trade to cast the horoscope for even a couple of months ahead. Forgetful of the huge dividends that they have declared in recent years, plantation chairmen are complaining that everything is against rubber.

Renewed attention is directed to the potentialities of that material for pavement, which was so confidently pointed to three years ago as the future salvation of the planting industry. On this head some interesting details were given by Dr. Schidrowitz in a lecture at the recent Chemical Exhibition in London. I cannot follow him in detail here, but one of his main conclusions was that the useful life of rubber paving would have to extend to 40 or 50 years if it was to compete with wood or asphalt, when the first cost and maintenance are taken into account. The main difficulty in estimating comparative costs is that we are at present, as he points out, without any definite figures as to wear and tear of rubber roadways. Rubber pavement has, of course, been in use in London for a great number of years, but only on a small scale, under cover, and where its cost has been quite a secondary matter. I do not find that the trade is looking with any confidence to the rubber road as the main panacea for keeping up the price of raw rubber.

There is, however, a decided feeling that the use of rubber might be considerably extended in other directions, if some trouble were taken in the matter. During the last year or two, however, as a prominent manufacturer told me, the works have been too busily engaged filling orders on standard lines to pay much attention to experiment. Probably the valuable honorarium to be offered at the 1914 Exhibition for suggestions as to new applications of rubber, coupled with the decided slackness now being experienced in many branches, will act as the necessary stimulant on the manufacturers' brains.

At the same time, I may say there is no general feeling that a glut of raw rubber is impending, the opinion being expressed in authoritative quarters that the present lull in the demand will be succeeded by increased requirements, which will absorb supplies at prices certainly no lower than those at present ruling. The premium at which Brazilian fine stands over plantation crepe cannot be explained away on any basis except that of intrinsic quality. This fact is now being recognized by plantation shareholders, who had perforce to sadly admit that the reports of this or that eminent chemist to the contrary do not carry much weight in the trade. Schemes are now being mooted whereby plantation rubber may be valued and sold on a strict basis of quality, determined by analysis. This, of course, is by no means a new question, but it is doubtful whether it will receive more consideration at the hands of the trade in the near future than it has in the past. It will take a good deal to convince manufacturers that a system of scientific testing is better than, or as good as, inspection based on experience.

A more important matter, in their opinion, would be the adoption of a uniform method of coagulation, so as to bring the plantation industry more into line with the Brazilian. The efforts which are being made in certain quarters to induce large contractors, like the government departments and the railway companies, to specify plantation (all-British) rubber as an alternative to Brazilian fine, do not seem likely to meet with much success; more especially in view of recent events, which, rightly or wrongly, have caused blame to be attributed to plantation rubber having been used in place of fine Pará.

PROJECTED NEW USE FOR RUBBER.

In textile mills, the operation known as "kissing the shuttle" has in recent years come under condemnation as being unhygienic; and in England, at any rate, strong pressure has been brought upon the government authorities to make the practice illegal. Nothing definite, however, has as yet been done in this direction as the officials say they are not satisfied as to the evils said to ensue. In a recently patented contrivance to obviate the necessity of "kissing the shuttle," rubber forms an important part. If this —the Wilson-Shackleton Patent Shuttle Threader—came into extended use, a considerable amount of rubber would be required, though perhaps not sufficient to prevent overproduction.

The present position of affairs with regard to this device appears, however, to be that the mill owners are disinclined to incur the expense of its installation, until the adoption of something of the sort is made compulsory; so the immediate prospects of the patentees are not too bright.

A. O. FERGUSON & CO., LTD.

With regard to the legal action reported in my last letter, and in which Mr. A. O. Ferguson was involved, I may state that the above newly established proofing firm at Hollinwood, Manchester, will not be affected. The injunction referred specifically to the use of certain proofing formulæ, but these, of course, do not comprise all the formulæ which are available for carrying on a successful proofing business. It might be thought that there was hardly room for another business of the kind in a district which has for so long been associated with the proofing industry, but I may point out that the export trade, especially in proofed cloth, has largely developed in late years, the manufacturers not having to depend so much upon the home trade as was the case in former times. With regard to this branch generally, at the present time it cannot be said that things are particularly brisk. Last summer, of course, was exceptionally wet and a bumper trade was done. This year, however, is more favorable to the sale of tennis balls and garden hose.

PROBLEMS OF THE RUBBER INDUSTRY.

A paper under this title was read a few months ago before the Liverpool section of the Society of Chemical Industry, by Mr. H. E. Potts, who will be known as the author of a book on the chemistry of rubber manufacture. Various problems came under review, but very little was put forward as to their elucidation, which still remains a matter for the future. The problems of importance were grouped as follows: 1. Quality of natural raw rubber. 2. Synthetic rubber. 3. Vulcanization. 4. Regeneration.

With regard to raw rubber, the present conditions of sale were condemned; the establishment of a conditioning house, where representative samples of plantation rubber could be vulcanized as a guide to value of the bulk, being strongly recommended. Mr. Potts had nothing to say against synthetic rubber except its high cost of production. Under vulcanization, reference was made to the action of litharge, which has recently been shown to cause a rise of temperature, owing to chemical reaction in the mixing. The reclaiming of rubber after being finely pulverized was said to yield surprisingly good results. I doubt whether this statement would be endorsed by manufacturers and users generally. An important desideratum of the trade was some method

of accurately prognosticating the life of rubber goods directly they were made, so as to obviate dependence upon the time test. Of course, this is what we have all been waiting for the last fifty years, and it would seem as if the period of waiting will be further prolonged. Rubber, Mr. Potts said, in reply to a question, was dried at 110° C, which from a chemical point of view was a low temperature. According to the usual procedure in British rubber works, 110° C would be considered a very high temperature; about 110° F being the ordinary figure, though in certain special cases higher degrees are used. As I am referring to the Society of Chemical Industry at Liverpool, I may add that the annual meeting of the society took place there in July, when the president, Prof. Marston T. Bogert, of America, gave his address.

NEW WORKS.

Mr. E. L. Curbishley, lately connected with the Reinforced Rubber Co., Ltd., at Hull, has commenced manufacturing on his own account as the Lloyd Rubber Co. at West Didsbury, Manchester; and with the long experience of the trade he has behind him should do well. The business is at present confined to rubber heels, though it is intended shortly to put several other lines on the market. Mr. George Spencer, who was for some time associated with Mr. Curbishley at the Gorton Rubber Co.'s works, has started in the proofing business for himself, under the title of the Monarch Waterproof Co., at Victoria works, Prinblett street, Manchester, thus adding another house to this well-known quarter of the proofing trade. The works will be under the charge of Mr. F. Dale, who has had considerable experience. It is understood that rainproof as well as macintosh garments will be manufactured.

RUBBER PAVING IN LONDON.

AMONG the many prospective new uses for rubber, none is more important than its employment as a paving material. Hence special interest attaches to details lately published of results obtained at two noted London hotels and one railway station.

In this connection, two essential points call for attention—efficiency and durability. Some ten years ago rubber sheets two to three inches thick were laid in the courtyard of the Savoy Hotel, for the purpose of deadening the clatter of horses' hoofs and the noise of vehicles. These are reported as being in very fair condition, although the slabs do not in all cases fit very closely. Certain portions have been subjected to special wear, owing to the stopping and restarting of vehicles, particularly where studded tires were used. Oil dropping from motor cars has likewise affected the surface of the rubber paving, and it has been found necessary to relay some of the slabs, possibly owing to their not fitting well.

Claridge's Hotel, the resort of crowned heads and aristocratic travelers, has less exacting traffic than the Savoy, and its rubber paving, laid 13 years ago, is only about one inch thick. In no case has it been necessary to replace the paving, but the old slabs have been relaid, as they were working out of position. This was caused by their not having been securely fastened down in the first instance. At neither hotel has the pavement been slippery for horses.

Owing to the nature of the traffic, a better judgment can be formed of the possibilities of rubber as a road material from the results obtained at Euston station than from those recorded for the two hotels named.

At Euston the vehicles reach the station by one archway and leave by another, the roadway under the arches being rubber paved. The paving was originally put down in 1881, the slabs used having a thickness of two inches. Twenty-one years later the approach portion had been worn down to half an inch and the outgoing paving to an inch and a half. The former was re-laid, the slabs being fresh, while the rubber in the latter is the same that was originally put down thirty-two years ago. Its early renewal is, however, anticipated. This unequal wear has been attributed to the grit brought from outside by incoming vehicles, from which outgoing ones are relatively free.

The fact that rubber pavement has been in use for respectively 10, 13, 21 and 32 years in the cases quoted, is considered to show the durability of rubber paving. It is no longer in the experimental stage and it has been suggested that its efficacy should be tested on some busy thoroughfare; but, as it has been remarked, tests of durability take a long time, and necessitate the lapse of many years before their results can be conclusively established.

THE FUTURE OF THE RUBBER INDUSTRY.

MUCH interest has been shown in London in the recent lecture of Dr. Philip Schidrowitz at the Chemical Engineering Exhibition on the "Future of the Rubber Industry." The lecturer recalled the fact that the increased supplies attracted by the "boom" of three years ago again brought prices to a reasonable level. He considered, however, that some critical years were at hand, involving for manufacturers a period of interest and difficulty.

The problems of the future he briefly summarized as follows: "How much rubber may we expect on the market, and how will price be affected thereby? What are we going to do with all this rubber that is coming? Will it be for the benefit or to the detriment of the industry?"

Apart from the question as to whether the new Brazilian "Defence Law" would produce the anticipated results of increased yield and reduced cost, Dr. Schidrowitz expressed the opinion that the production of plantation rubber is sufficiently large to make it the dominant factor in the world's rubber markets. The future increase in that production might effect a radical change in the various branches of the industry. Assuming this year's plantation output as 50,000 tons, he estimated the quantity for 1915-16 as possibly 100,000 to 150,000 tons, and for 1920 as 200,000 to 300,000 tons. Even without any material increase from Brazil, the world's production in two or three years' time might be quite double that of the present day, while in six to seven years the supplies might have trebled or quadrupled.

The variable quality of plantation kinds has militated against their general use as compared with Brazilian hard fine, which, the lecturer remarked, is a commodity of known qualities. A scientific method of valuation he regarded as one of the most urgent requirements of the crude rubber industry.

SCIENTIFIC VALUATION.

The lecturer urged the need of some system by which manufacturers might test the value of samples offered to them. What might be expected from Amazonian rubber they know roughly, but they are puzzled by the variations in the plantation article. It is only possible for works with highly specialized technical laboratories to form a reliable opinion. A manufacturer with the ability to select a batch of rubber worth 10 to 25 per cent. more than its price is in a position to pick and choose in his purchases.

The lecturer, while advocating the importance of standardization, considered that subject as less urgent than the establishment of a scientific basis of valuation.

In conclusion, he referred to the relatively small amount of £3,000, annually devoted to scientific investigation by the leading association of plantation rubber producers, although millions are at stake in the industry.

TO ENCOURAGE NEW USES OF RUBBER.

THE secretary of the Mincing Lane Tea & Rubber Share Brokers' Association, Limited, of London, has sent out a letter—which is reproduced below—to the plantation companies of the East, suggesting that they co-operate to encourage the devising of new ways in which rubber can be put to practical and profitable use.

THE MINCING LANE TEA & RUBBER SHARE BROKERS' ASSOCIATION, LTD.

6, MINCING LANE, LONDON, E. C., June 11, 1913.

To the Secretary.

Dear Sir:

The increasing output of rubber from the East, points to the advisability of those interested in rubber plantations organizing, with the object of fostering new uses for the product.

My committee would point out that an organization exists, both in India and Ceylon, for pushing the sale of tea from these countries, but so far no steps have been taken by the plantation rubber industry to find new outlets for the product.

The committee of this association, in order to give some incentive to place rubber to new uses, proposes to offer one hundred guineas at the Rubber Exhibition to be held in London next year, for the best new use for rubber.

It has been in the mind of the committee that if each individual company took a small interest in the object of pushing plantation rubber, it would probably result in a larger consumption, and it is suggested that an association be formed with a view to achieving this end.

There are some 530 rubber companies mentioned in the new book about to be published by this association, and if each company would subscribe a small amount, say 10s. for every £1,000 capital, to such a scheme, a fair sum would be available, and, with a practical committee would be in a position to consider any scheme, such as laying experimental rubber roads, etc., and if thought desirable to foster such enterprises.

As there would be no promotion expenses in forming such an association, all moneys subscribed would be available for expenditure for practical benefit to the industry.

My committee will willingly subscribe £50 to such an association, and will be pleased to hear the views of your directors on the proposition.

Should a sufficient number of approving replies be received, my committee are prepared to take further steps to formulate a practical scheme.

By Order of the Board,

A. KENDALL, Secretary.

RUBBER AT THE LONDON BUILDING EXHIBITION.

Rubber occupied a leading position at the recent Building Exhibition, held at Olympia, London. Its various uses in connection with floor covering were illustrated by the exhibit of the India Rubber Flooring Co., of London, which likewise showed mosaic tiles of rubber.

Another prominent exhibit was that of the India Rubber, Gutta Percha and Telegraph Works Co., of Silvertown, which displayed a full line of its products applicable to the building industry.

Noticeable among the articles which attracted attention were rubber stair treads, which have in England practically superseded those made of brass.

There was a full exhibit of the wall protecting appliances known in England as "Damp Courses," which were shown by 17 firms. Storm- and rain-proof roofing was likewise an item of interest.

It has been remarked that the use of rubber in the building industry is making progress, but various misconceptions have to be overcome, arising from insufficient acquaintance with the properties of the article.

NEW USE FOR BALLOON MATERIALS.

Recent European fashion journals report the introduction for wear in traveling and at the seaside of dust cloaks composed of the material used for balloons. They are of course provided with ventilation.

AN ENGLISH VIEW OF PROSPECTIVE RUBBER CONSUMPTION.

In discussing the question of future rubber consumption, the "Economist" of London remarks:

"If prices fall to 2s. a pound, it is perhaps not unreasonable to assume that consumption will continue to increase in the existing uses of rubber, and rise, perhaps, to 150,000 tons or even 200,000 in a few years, for as prices fall, not only will the consumption of rubber goods increase, but also genuine, good rubber will be substituted for the poor and composite materials which so frequently masquerade as 'rubber.'

"Unless, however, a very large demand arises for new industrial purposes which are not yet apparent, it will be impossible to dispose of the enormous quantities mentioned except at very much lower prices than have ever yet been known in the rubber market. In these circumstances clearly one of two things must happen. Either large tracts of land that have been planted must be abandoned to the jungle, or else the cost of working the estates must fall to the neighborhood of 6d. a pound—a cost which has already been realized in favorable circumstances in Ceylon."

RUBBER SOLES FOR MALTSTERS.

German malt workers have found that the soles and heels of their wooden shoes were liable to make them fall on the slippery floors of malt houses. Felt soles and heels failed to fulfil expectations. Some thirty years ago rubber shoes were introduced and were found to answer the purpose intended, but the price was prohibitive; a pair of maltster's shoes coming as high as $10. A way out of the difficulty was found by putting rubber soles and heels on the wooden shoes, which thus cost much less than all-rubber shoes. This plan has since continued in vogue. In some cases the soles are provided with a rubber sponge foundation, which obviates any pressure on the malt.

DIRECT SHIPMENTS OF RUBBER TO NEW YORK.

MR. C. A. LAMPARD of London being a recognized authority on plantation rubber from the companies' standpoint, it is of interest to note his remarks at the recent meeting of the Malayalam Company, on the subject of direct shipments:

"I believe that the future developments in regard to rubber will necessitate our shipping the produce more freely than we have done hitherto to the market where it is consumed, and that we do not penalize our product by bringing it to this market and saddling it with a load of expenses, which are really unnecessary, when we have shipping facilities for selling it direct to the markets of consumption, and where, if we did that, it would meet with a very cordial reception."

In commenting on these remarks of Mr. Lampard, the "Financier" adds:

"The foregoing should serve as a hint to those who are interested in the preservation of the London rubber market, and a warning to the shipping ring, which, by its exorbitant freight charges, threatens the life of the goose which lays the golden eggs. It was prominently stated by large American rubber consumers at the late exhibition in New York that they could obtain supplies at less cost and of a more satisfactory character by purchasing the same on the spot, and shipping direct from mid-eastern ports. It was furthermore complained that the consignment of plantation rubber to London and the subsequent handling and sorting which it underwent before reshipment sometimes resulted in such a mixup of plantation grades as no manufacturer cared to accept. Needless to say, such results are very prejudicial to plantation rubber as a whole, exaggerating as they do the lack of uniformity in the cultivated product."

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

Some Rubber Interests in Europe.

GERMAN PRODUCTION OF TIRES.

ACCORDING to statistics lately published, the German production of rubber goods some years ago represented $75,000,000. In 1911 the production of tires alone was estimated at about $34,000,000, including: automobile tires, $17,500,000; bicycle tires, $10,000,000, and solid tires, $4,500,000. In the manufacture of tires there were 8,310 hands engaged, with total wages exceeding $2,500,000.

RUBBER INVESTIGATION IN GERMANY.

Dr. Fritz Frank, of the Henriques Chemical Laboratory, Berlin, has received from the Jäger Endowment a sum equalling $750 for the prosecution of a work regarding the composition and proportion of the albuminous substances in latex and in rubber.

FRANKFURT ASBESTOS MANUFACTURING COMPANY.

The annual report for 1912 shows that the amounts written off in accordance with the resolution of the general meeting of May 29, 1912, equaled $150,000. It is proposed to transfer the net profit for 1912 to the reserve and guarantee accounts.

GOOD DIVIDEND OF LEIPZIG COMPANY.

The Philip Penin Rubber Manufacturing Co., of Leipzig, reports favorable conditions. After liberal allowances for various reserve accounts, a dividend of 25 per cent. has been declared.

LIVERPOOL RUBBER TRADE WITH THE UNITED STATES.

Returns of crude rubber exports from Liverpool to the United States show for 1912 a reduction from those of 1911. The figures are: 1911, $10,548,240; 1912, $8,299,515. This falling off is attributed to the increased demand for plantation rubber in the States, which affected the shipments from Liverpool of African and other descriptions, for which that port is both an importing and exporting center.

HUNGARIAN COMPANY TO MAKE TIRES.

Under the auspices of the Hungarian government, the Matador Rubber and Balata Works, of Pressburg, Hungary, are enlarging their plant by the addition of a tire factory.

LIBERIAN RUBBER PRODUCTION.

As a large percentage of the rubber produced in Liberia was carried across the borders by natives and disposed of in neighboring European colonies, the total production cannot be accurately stated. The quantity exported in 1912 was, however, 93,822 pounds.

The Liberian Rubber Corporation, an English company, has a concession for gathering rubber in Liberia. A rubber plantation was started some years ago on modern lines, about 25 miles from Monrovia. Out of 300,000 trees set out in this plantation, 9,000 are now ready for tapping. A good quality of crude rubber is expected if a careful oversight is exercised of tapping and gathering. This is the only attempt at cultivating rubber trees made in Liberia.

ITALY'S RUBBER TRADE.

According to a report from Consul General James A. Smith, of Genoa, the Italian imports of crude rubber and gutta percha amounted in 1911 to $7,939,692 and in 1912 to $9,009,240. Of these amounts the United States furnished, respectively, $303,203 and $228,126.

PROGRESS OF DANISH CABLE CO.

The Nordiske Kabel og Traadfabriker (Northern Cable and Wire Factory), of Copenhagen, has paid for 1912 a dividend of 7 per cent. upon its enlarged capital equalling $600,000. Consumption of its products is said to be increasing in Denmark, and the installation of rubber, as well as spinning machinery, has been augmented. Additional premises for the manufacture of high tension cables are being at present erected.

NEW RUSSIAN ASBESTOS SYNDICATE.

ACCORDING to a communication from a correspondent of the "Gummi-Zeitung," five of the most important Russian asbestos firms have formed a syndicate. The yield of Russian asbestos has much increased in the last five years, owing to the large demand for export and the increased industrial employment of the article in Russia. The Ural production has attained unprecedented importance, having reached last year the quantity of 15,000 tons, due to some firms having doubled or tripled their output. Three quarters of the entire yield is exported, and one quarter used in Russia, the latter proportion chiefly composed of lower grades.

Russia supplies only a small portion of the American import of asbestos, the figures for 1911 having been: Canada, 56,950 tons; Germany, 123 tons; Russia, 50 tons. Russia had furnished in 1909, 45 tons and in 1910, 92 tons.

HAVRE'S TRADE IN RUBBER.

Mr. John B. Osborne, United States Consul at Havre, France, contributes a report on the commerce and industries of that port in the June 11 issue of the "Daily Consular and Trade Reports" which is a valuable document, as it goes much into detail in regard to the business of that important town. But there is one paragraph—given below—that is particularly interesting to the rubber trade, as it refers to the amount of rubber that passes through that port each year:

In recent years about one-half of the total rubber imports of France have been entered at Havre. In 1911 the value of the Havre imports of this article in the general commerce was no less than $26,762,000, surpassed only by the valuation of the cotton imports in that year. The imports of 1912 were still heavier, being 24,344,275 pounds, with a probable valuation of about $28,130,000. The imports for consumption were far greater in 1912 than in the previous year, being 9,310.9 metric tons as compared with 8,692.2 metric tons in 1911.

The principal dealers in rubber in Havre do not come into direct contact with the French manufacturers, who are located outside this consular district almost exclusively; their work is to superintend the arrivals and shipments on behalf of houses in Brazil, England, and the United States. They receive the goods and attend to forwarding them, although they are often called upon to examine and classify the merchandise. At the same time they buy large quantities at the public auctions of rubber, which take place here once a month. Most of the rubber from the French Kongo is shipped to Havre and sold in this market. The quantities sold at auction are about 1,000 tons a year, the bulk of which is exported to the United States. The rubber industry is reported to be very prosperous, and local dealers say that the large manufacturers made big profits last year.

Quotations for rubber at Havre on December 31, 1911 and 1912, respectively, were as follows, per pound:

Kinds.	Dec. 31, 1911.	Dec. 31, 1912.	Rise (+) or decline (—).
Kongo:			*Per Cent.*
Upper-Oubangui	$1.04-$1.06	$0.98-$1.08	—3.73
Kotto	1.04- 1.04	.98- 1.08	—3.73
Sangha-Oubangui	1.03- 1.06	.98- 1.00	—5.76
Fine Para	1.02- 1.03	1.09- 1.10	+6.77

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

ANNUAL REPORT OF HENRIQUES LABORATORY, BERLIN.

AS will be recalled, the "Chemical Laboratory for Commerce and Industry," of Dr. Robert Henriques, Berlin, has been carried on since his death by his successors, Dr. Edward Marckwald and Dr. Fritz Frank. The special section devoted to rubber was established in April, 1910, under the name of "Central Rubber Bureau for the Colonies," and has just issued its third annual report.

Upon its removal to its present more commodious quarters at 88 Lützowstrasse, the rubber section was equipped with a vulcanizing boiler and regenerating plant, as well as grinding and sifting machinery. During the year under review, washing machinery on the system of Werner & Pfleiderer has been added. The number of plantation companies belonging to the Bureau has, within that period, increased from 24 to 26.

Cordial interest has been shown in the work of the Bureau by the German Colonial Office and its representatives at different points. A lecture delivered by Dr. Marckwald, dealing with his visit to the Usambara plantations and the measures proposed for improving the quality of the rubber produced, was attended by Dr. Schnee, Governor of German East Africa, and other important officials. In this lecture the cultivation of *Hevea* in suitable locations was advocated. Frequent communications were maintained by the Bureau with the various organizations in the German colonies.

TECHNICAL WORK.

Among the features of the technical work were the investigations as to the albumen content in rubber goods and the determination of albumen in crude rubber. Another feature was the investigation of the "Mengwerl" juice, used by the natives of East Africa in the coagulation of *Manihot* latex, in conjunction with other coagulants. Various other technical points were dealt with as more urgent work permitted.

GENERAL WORK.

Besides the strictly technical questions, a number of others of a more general character were taken up. Castor oil seeds from German New Guinea were found to yield an oil of first class quality, while a variety of drugs from the German possessions were also examined. Tests made with wild lemons from West Africa showed that they yielded 5 to 7 per cent. of citric acid, which can be used in the coagulation of rubber.

East African tests of manuring and soil had to be partially interrupted, in consequence of the difficulty experienced in procuring the necessary labor. The results obtained, however, showed that the rubber tree does not require a rich, heavy soil, but that the fineness and depth of the earth have a material effect upon growth and yield.

SYNTHETIC OR ARTIFICIAL RUBBER.

The so-called "fish-rubber" was examined, and found perfectly valueless. Regarding synthetic rubber, in confirmation of previous utterances of Dr. Marckwald, the situation is said to be that the production of synthetic rubber has been successful in the laboratory, and to a small extent in the factory. For its production, however, on a large scale, very important difficulties have to be overcome. The opinion is expressed that a parity of price with that of natural rubber may be expected in the future, but up to the present no way has been shown of obtaining a parity in quality, particularly as natural rubber, besides the rubber substance proper, contains other and important elements, the introduction of which into the artificial product has not so far been successfully accomplished.

ESTABLISHMENT OF STANDARD QUALITY.

At the conference of East African plantation companies which took place in April, Dr. Marckwald referred to the difficult position of the German East African plantations, advocating united action on the part of planters and planting companies as well as the establishment of a first-class standard quality. While these proposals encountered some opposition, they met with the expressed approval of such expert authority as Professor Zimmermann. The effect upon East African rubber of unskilful preparation is illustrated by the statement that from March to December, 1912, German market quotations for first class Pará rubber fell about 7 per cent., while the reduction on *Manihot* rubber was about 27 per cent. The trials of washing under water, which have been in progress for a year at the Bureau with Werner and Pfleiderer's automatic machine, have led to favorable results.

TESTS MADE.

In the rubber section, 214 tests were made; including: *Manihot Glaziovii*, 104; *Kickxia*, 47; *Ficus, etc.*, 18; *Hevea*, 20; *gutta* percha 7; balata, 3; other kinds, 15.

The following results are deduced from these tests:

1. That it is quite possible to obtain in German Africa *Manihot* rubber of first class quality.

2. That the *Manihot* rubbers obtained from latex, without the addition of coagulating agents, are only of medium quality.

3. That through the addition of certain salts in coagulation, rubbers of special nerve are obtained.

4. That the present method of the preliminary treatment of *Manihot* rubbers in German East Africa, through washing, etc., in very many cases has not the anticipated favorable effect either qualitatively or commercially. In commenting on these results it is remarked that rubbers coagulated with acetic acid were of medium quality, while the treatment of the rubbers with the roller produced unfavorable results.

COMPARATIVE RESULTS OF VARIOUS COAGULANTS.

Different coagulants were used with four groups of samples: 1, citric acid and calcium-phosphate; 2, magnesium-sulphate and citric acid; 3, magnesium-sulphate; 4, magnesia-salt. All these rubbers were much superior to the products obtained with chloride of calcium and acetic acid. Some rubbers were produced which in strength and nerve surpassed all products hitherto obtained. Citric acid, on account of its high market price, can only be used where there is abundance of wild lemons. Such, as has already been remarked, is the case in West Africa. On the other hand, magnesium-sulphate is an extremely cheap coagulant, a trial of which is recommended.

NEW COAGULATION PROCESS.

Attention is called to a new process of coagulation patented by Dr. Collosseus, based on the double transposition of the albumen components in the latex. Even when used cold, this process is said to be satisfactory, both as to speed and quantity. It is claimed that rubbers thus produced vulcanize in half the time required by others of like origin but differently prepared. Mechanical tests are said to have shown them to be of exceptional quality, the vulcanized product having considerable nerve. Such are a few of the salient points of this interesting report. Though dealing specially with the German colonies, it contains many features of general interest on the subject of rubber cultivation.

A GERMAN VIEW OF THE BRAZILIAN SITUATION.

In commenting upon the recent happenings in Brazil, the "Gummi Zeitung" expresses doubt as to the prospects of rubber goods manufacture in that country. Should the Brazilian industry, however, gradually acquire importance, the abstention of European countries, particularly Germany, from purchases of Brazilian rubber might be anticipated. It is added that a heavy loss for Brazil would be thus implied, as the consumption within that country of its rubber production is not to be seriously considered.

AUSTRIAN TALC ASSOCIATION.

ACCORDING to the booklet issued by the Austrian Talc Association (Association of Those Interested in Talc), an effort is being made by that body to promote the sale of the article in various industries. With this object a summary has been compiled of its industrial uses, among which rubber manufacture occupies a leading position. On this subject the report says:

"Talc is used for various purposes in the rubber industry, but a further extension of its use could be attained by its employment at the points of production, for the preservation of crude rubber against oxidation, by which the value of the rubber would be increased. The Association has approached the Brazilian government on this matter. Talc is used in rubber manufacture in vulcanization, and as a filling material for various rubber products. It is of special importance in the manufacture of cables and in that of insulating rings for electrical connections. For this purpose there is required a very light quality, with a considerable resistance to electricity, absolutely free from sand and other impurities. In the testing of current, any ring which contains even a small grain of sand is at once penetrated and becomes useless. Talc is likewise used for packing intended to resist heat, steam, acids and water."

This association does not engage in the sale of talc, but is prepared at all times to answer questions about the article and its sources of supply in Austria and Hungary. Its address is Schwarzenbergplatz 4, Vienna, Austria.

United States imports of talc (ground or prepared) varied of late years as follows: 1910, 18,158,871 pounds; 1911, 12,878,292 pounds; 1912, 20,465,942 pounds. The chief sources of imports were in 1911: Italy, 6,531,256 pounds; France, 3,580,501 pounds; Canada, 1,282,772 pounds; Austria-Hungary, 1,174,976 pounds.

Austria thus stands lowest among the larger sources of the American supplies of talc, but is evidently desirous of a larger share of United States trade.

THE RUBBER TRADE IN JAPAN.

By a Resident Correspondent.

JAPANESE INTERESTS IN MALAYA.

ACCORDING to recent statistics there are in the Malay Peninsula 87 Japanese rubber plantations, with a total area of 85,069 acres, of which 16,455 are under cultivation. The total investment of Japanese capital in Malaya is estimated at about $1,000,000. About $10,000,000 would, however, be required for the exploitation of the uncultivated holdings. Of the investors, two-thirds are small, planting being with them an additional occupation. They are consequently unable to wait several years for profits, and growing discouraged at the low price of rubber, are considering whether it would not be better to sell their plantations than to invest more money in them.

JAPANESE EMIGRATION.

By the latest official figures, the population of Japan is 69,148,980 and the area of the country 268,897 square miles. Four years' returns show the average yearly increase in population as 4.3 per cent. The young men of Japan have therefore been giving attention to emigration as an outlet for this growing population, being encouraged by the press in their aspirations. Instances are recorded of some of them having taken up rubber planting in the South Sea Islands, with satisfactory results.

Upon finally venturing to go to the Malay Peninsula they at first suffered from fever, but after vanquishing this and other difficulties, became successful planters and prominent among the local Japanese population.

A PLANTER'S OPINION.

An optimistic rubber planter lately said:

"Three problems are before the Japanese rubber planter: 1, artificial rubber; 2, white ants, and 3, future lower prices of rubber. With regard to the first, it is not considered as likely to rival Pará rubber, and even if it corresponded with the latter in chemical and physical conditions, would never rank with it as a practical industrial raw material. As to the second, if proper care is exercised on the plantation, serious damage need not be anticipated from this cause. With reference to the third, it may be anticipated that reduced prices will come in the near future, but this reduction will of itself bring about many new forms of consumption. The lower the price, the more will demand increase.

"No serious damage will ensue for rubber plantations unless the price descends below two shillings per pound.

"Rubber planting in the Malay Peninsula is certainly a profitable business, and the only problem is how to plant so as to make it as much so as possible."

The above is an optimistic opinion. Others of a pessimistic character have of late been expressed, based on the most recent conditions. However, Japanese planters are much encouraged by the report that Baron Shibuzawa, the most important business man in Tokio, has bought a plantation of 1,000 acres, and it is thought that his example will encourage other investors.

THE B. F. GOODRICH CO. MOVES TOKIO BRANCH.

The B. F. Goodrich Co. recently moved its Tokio branch to No. 1 Chome Yurakucho, Kojimachi, Tokio. It has been handling tires and other rubber goods for the last twelve years, and now contemplates importing full lines of automobile and cycle tires, belting, hose, packing and surgical goods: as well as specialties for railways, electric car works, paper mills, etc.

COMPARATIVE IMPORT STATISTICS.

The following are statistics of Japanese imports of rubber goods for 1911:

	Pounds	Value
Insulating Tape—		
United States	198,108	$75,161
Great Britain	20,679	13,627
Germany	5,415	1,689
Sheets—		
United States	66,088	67,217
Germany	37,676	22,215
Great Britain	4,244	6,354
Sweden	8,080	10,812
Switzerland	1,833	1,964
Tubes and Hose—		
United States	19,569	16,975
Germany	36,179	31,007
Great Britain	8,299	10,603
Rubber Webbings for Shoes—		
Germany	.....	49,370
Great Britain	.....	21,195
Rubber Cords and Threads—		
United States	.....	3,149
Germany	.....	4,352
Great Britain	.....	14,444
Other Rubber Goods—		
United States	.....	95,996
Germany	.....	140,211
Great Britain	.....	66,060
Overshoes .....(pairs)	40,293	19,852
Rubber shoes .....(pairs)	9,627	20,579
Air pillows .....(number)	24,207	13,606

All imports of overshoes were from the United States. Air pillows were mostly from Germany.

Some Rubber Planting Notes.

HON. E. ROSLING LEAVES CEYLON.

THE departure of the Hon. E. Rosling from Ceylon was the occasion of a farewell demonstration quite unusual.

Mr. Rosling was the head of the Dimbula Planting Association from 1897 to 1899, and of the Ceylon Planters' Association from 1900 to 1901, and from 1909 to 1910. He was one of the most prominent men in the Ceylon planting community and his departure has caused much regret. Satisfaction is expressed at the prospect of his continuing in England to further the interests of Ceylon.

Before leaving Ceylon for Europe he gave expression to his views as to cost of producing rubber. He said:

"As regards the cost of production in rubber, with up-to-date cultivation, trees growing older and a liberal period allowed for the renewal of the bark, I believe that Ceylon will produce its rubber cheaper than any other country.

"I should say that it is quite within the bounds of possibility that in the future the superintendent who cannot put his rubber f. o. b. for 8d. will be looked upon as a very expensive worker."

RESULTS OF RUBBER TAPPING IN CEYLON.

At a recent meeting of the Committee of Agricultural Experiments, held at Peradeniya, Ceylon, it was decided to keep records as to how many trees could be tapped per day in each experiment.

The chairman, Mr. R. N. Lyne, quoted figures showing the large average yield of the trees at Heneratgoda on the outside of the three small plantations there, indicating the beneficial effects of light and room. He exhibited diagrams showing how plantations could be laid out reproducing the conditions of these trees.

AMERICAN TRADE EMISSARY IN CEYLON AND INDIA.

Mr. Henry D. Baker, American consul at Nassau, is spending some eight months in India and Ceylon, with a view to investigating the opportunities for extending American trade with the East. Rubber forms part of his program. His reports will in due time be published by the United States Department of Commerce and Labor. Mr. Baker was formerly American consul at Hobart, Tasmania, and spent five years in collecting information in Australia and New Zealand.

RUBBER CHEMIST FOR CEYLON.

Mr. L. E. Campbell has entered upon his duties as assistant chemist to the Ceylon Rubber Research Committee.

The new expert's work, it is understood, will lie chiefly in the study of rubber trees and their diseases; and a committee of five planters will assist him. Local opinion is that much good should result from this new appointment, for the chemistry of the rubber industry calls for every care and research.

PRESIDENCY OF CEYLON ASSOCIATION.

Mr. Loudoun Shand has been re-elected president of the Ceylon Association, London, for another year.

THE ALL-CEYLON EXHIBITION.

Last year's All-Ceylon Exhibition has realized a surplus equaling nearly $2,000, which it is proposed to hold in anticipation of the next exhibition, scheduled for 1917.

CEYLON (PARA) RUBBER COMPANY, LIMITED.

At the recent London annual meeting of the Ceylon (Pará) Rubber Co., Limited, Mr. R. B. Magor, the chairman, expressed the conviction that in the course of a few years the cost of delivery in London will not exceed 1s. per pound. By that time, he remarked, the whole of the company's area will be in full bearing. This company was registered in 1904 and by 1910 had its land nearly all planted with rubber.

ENGLISH VIEW OF THE FUTURE OF RUBBER.

At the annual meeting of the Rubber Growers' Association Mr. Noel Trotter, acting chairman, said:

"So long as the world's demand for rubber progresses in the way it has done in recent years, there can be little doubt that a very large further increase in supplies will be necessary to satisfy the growing requirements. For instance, we, in London, have before our eyes the enormous growth of the omnibus traffic, since horse-drawn conveyances were superseded by rubber-tired motor-buses. It is reported that shortly the existing public carrier vans will be scrapped and replaced by motor vans extending their sphere of direct delivery, and competing with the railways. The effect on our country roads will be appalling, but it all means more rubber."

JAVA RUBBER PRODUCTION.

Exports of rubber from Java for the year 1912 were 2,233,117 pounds, against 982,000 pounds in 1911. According to the report of the British acting consul for Java, this quantity was principally composed of *Ficus* and *Hevea*, very small quantities of Ceará and *Castilloa* having been produced.

RUBBER IN SUMATRA.

According to a British consular report, the area under rubber on the east coast of Sumatra at the end of 1912 was about 208,000 acres, divided as follows: British companies, 84,000; Dutch companies, 69,500; United States companies, 27,500; Belgian and other companies, 27,000; total 208,000 acres. It is estimated that there were 44 British companies working on the east coast, with a total issued capital equaling $26,500,000. Exports of rubber from the east coast of Sumatra were, in 1910, 539 tons; 1911, 813 tons; 1912 (estimated), 1,800 tons.

The report adds that the plantation rubber produced has, on the whole, shown careful preparation, while the prices realized have been good. It is thought that when the large areas planted are in full bearing the cost of production will be comparatively low.

RUBBER EXPORTS OF PORTUGUESE EAST AFRICA.

According to the report of Consul G. A. Chamberlain, Lourenço Marquez, the rubber exports of that province for 1912 represented the following values from the various ports:

Lourenço Marquez	$9,369
Inhambane	22,785
Chinde	2,661
Quelimane	6,687
Mozambique	41,903
Beira	55,317
Total	$138,722

It has been estimated that, with the extensive installation of machinery, the output of the province would exceed 500 tons annually.

Vine bark produces 4.97 per cent. of rubber, bone dry and free from resin; root bark producing 6.97 per cent.

PROPOSED RUBBER REFORMS IN PORTUGUESE COLONIES.

A measure which is under consideration by the Portuguese legislature provides for immunity from export tax, during twenty-five years, of rubber extracted from the *Ficus elastica*. Similar immunity would extend during fifteen years to *Hevea* and *Castilloa* rubber, and during ten years to *Manihot* and other varieties. Articles needed for the cultivation and tapping of rubber trees, and for the preparation of latex, it is proposed to admit free of duty.

THE TROPICAL AGRICULTURAL COLLEGE.

THE proposal to establish a Tropical Agricultural College still continues to be discussed in London. Sir Henry McCallum, the late governor of Ceylon, wrote to the "Times" advocating the claims of the island for such an institution. He urged that the whole of Ceylon is devoted to tropical agriculture, while the student would have an opportunity of obtaining a colloquial knowledge of the essential Tamil language by intercourse with the laborers, mostly of that race.

Another point brought forward by Sir Henry in favor of Ceylon is that the Peradeniya Gardens offer a unique and ready-made site.

Nor will Sir Henry be alone in his championship of Ceylon. The Hon. E. Rosling, before his recent departure from there for England, was appointed deputy of the Board of Agriculture, by the following resolution:

"That the Hon. Mr. E. Rosling be appointed deputy of the Board of Agriculture, Ceylon, to the London Committee, to arrange a deputation to the Secretary of State to urge the claims of Ceylon as a site for the Imperial College of Tropical Agriculture."

Mr. Rosling's views on the subject were expressed as follows: "If there is to be only one college, Ceylon is the only site for it. In Ceylon we have a rainfall varying from 25 inches to 200 inches; we have variations in elevation and soil, and we could grow almost every commercial product that could be grown in the tropics. Therefore, if a college were started here men could get practical experience at their doors; at any rate a short day's journey would take them into any one of the districts. We can only hope that the Secretary of State will view it in a similar light."

While the cause of Ceylon is being urged by Sir Henry McCallum, Sir Henry Blake, Hon. E. Rosling, and Mr. Crosbie-Roles, the claims of Trinidad and the West Indies are being put forward by Dr. Francis Watts, Sir Richard Morris, Mr. Norman Lamont and other advocates of that location for the college. According to the June issue of "Tropical Life," it was intended to hold an informal discussion between the representatives of Ceylon and those of the West Indies, with the view of further meetings. The readers of THE INDIA RUBBER WORLD will recall the editorial on the subject which appeared in the April issue on page 339.

The "Malay Mail" suggests the possibility of several colleges being required, in view of the wide field to be covered, adding that it would fain see a college in the West Indies, another in Ceylon or Southern India, another in Burmah, one in the Federated Malay States, and finally, one in Queensland to serve the needs of tropical Australia and the islands of Oceania. The Malay college would have no financial relations with the colonial scheme, being run and supported by the Federated States. In the concluding words of the article: "We have heaps to learn yet about the rubber tree, and almost as much about the coëo-nut palm."

VALUE OF SCIENTIFIC RESEARCH TO RUBBER PLANTERS.

At the recent London meeting of the Consolidated Malay Rubber Estates, Limited, Mr. J. L. Loudoun Shand, the chairman, in reporting the contribution of £80 ($400) to the Malaya Research Fund, said:

"Various systems of tapping adopted have been under careful observation, and the distances at which our trees should be planted, methods of cultivation and prevention of diseases are all now carried out under scientific guidance. I should like to take this opportunity of saying how great I believe has been the benefit to the cultivation and preparation of rubber, which the light of science has conferred upon us; and I believe that no expenditure could have been more fully justified. We have learned much, but there is still much to learn as to the cultivation and manufacture of rubber."

BELGIAN RUBBER INTERESTS IN MALAYA AND SUMATRA.

IN a neat and attractive booklet of 88 pages, recalling the general features of the literature distributed by the Malaya Section of the New York Rubber Exhibition, Mr. Charles Grenier, editor of "Grenier's Rubber News," has dealt with the special subject of "Belgian Rubber Interests in Malaya and Sumatra." Being intended for distribution at the Ghent Exhibition, it is to a great extent in French, the most interesting parts of the work being in that language as well as English.

The most important Belgian rubber financial corporation is the Société Financière des Caoutchoucs, or Rubber Financial Company, which has a cultivated area of nearly 40,000 acres, including the holdings of some 10 companies, with estates in Malaya and Sumatra. Of these the most important is the Federated Malay States Rubber Co., Ltd., with headquarters at 21 Rue Arenberg, Antwerp. The area owned by this last named company is about 7,600 acres, nearly two-thirds of which is planted. Up to the end of January about 376,000 trees had been tapped.. An estimate of the yield for the season 1912-13 had been made as 1,000,000 pounds.

Another important company under Belgian control is the Kuala Lumpur Rubber Co., with a cultivated area of 5,000 acres, about half of which is in bearing.

Of the Sumatra estates controlled by the Société Financière, the Sennah Rubber Co. has a total cultivated area of 3,321 acres.

Belgian capital is thus finding an outlet in the Middle East and keeping in touch with the progress of rubber cultivation in that quarter.

THE FUTURE CONSUMPTION OF RUBBER.

The Batavia Plantation Investments, Limited, recently held a meeting in London, at which Mr. G. St. Lawrence Mowbray, chairman, said:

"The rubber industry is closely bound up with the motor business; indeed, it is the use of motors that has made it possible to transport rubber plantation supplies, and eventually rubber plantation crops, to and from estates that otherwise must have remained inaccessible jungle and wilderness. I am looking forward to the time when rubber will be enormously used not only for cycles and motor-cars, but in the manufacture of aeroplanes and waterplanes. There is another purpose to which it may be applied, and that is for spring buffers to railway carriages.

"We already have rubber flooring for business offices, courtyards of hotels, and other places—a practical reality which the reduction in price would bring into widespread use. Let us imagine, for instance, the Palm Court at Selfridge's, or the promenade at Olympia, floored with rubber, or go even further and picture to ourselves the Strand or Threadneedle street paved with it. We might then realize the ideal of a noiseless London. Just consider the quantity of rubber that would be required to pave the main streets of the City of London, and then conjecture how much more would be needed for the principal thoroughfares of our great provincial cities, and those of the Continent, and the United States of America. Well, even if the world's output of rubber did rise to the 300,000 tons per annum in 1919 that a well-informed writer estimates, I think there need be very little fear of lack of demand for it, and the cheaper it becomes the more of it will be required."

RUBBER ESTATE IN BURMA REORGANIZED.

Advices from Burma report that the estate of the Shevegyin Rubber Co. has been put on a proper basis, under the direction of Mr. W. R. Shelton Agar, the Gampola (Ceylon) planter. The estate has a new factory fully equipped for the preparation of rubber, which has cost the equivalent of $30,000.

HEVEA RUBBER IN BRITISH GUIANA.

THE accompanying illustrations show decided progress in Pará rubber planting in British Guiana. They are from photographs taken some forty miles up the Mazaruni river on the Bartica estate. This estate now has about 65,000 trees, and

TAPPING HEVEA TREES AT BARTICA ESTATE.

when those in the nursery are in place will have 100,000. Between 500 and 600 acres will be ready for tapping in the

HEVEA TREES TWO YEARS AND TEN MONTHS OLD AT BARTICA ESTATE.

latter part of 1914. The trees show just as rapid growth and as notable wound response as has been seen in the Malay States.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

SOME developments of considerable importance in connection with the local rubber industry are foreshadowed by the formation of a new American company called the British Guiana Consolidated Co., Limited, whose offices are at Mills building, 35 Wall street, New York. The capital of this company, I find from the prospectus, is to be 300,000 shares at $5 each 7 per cent. preference stock, and 1,000,000 shares at $5 each common stock. The 7 per cent. preference stock is preferential as to dividend and assets, and furthermore will share equally with the common stock in any and all profit distributions after 10 per cent. per annum shall have been paid upon the latter. The company is described as a consolidation of certain interests, united with a view to simplifying and economizing operations in a number of industries, prominent among these being the cultivation of the Pará rubber tree. "This tree," says the prospectus, "in its native or uncultivated state, at present yields the best quality of rubber, but a larger proportion is of inferior rubber obtained from a tree producing what is known as balata. Trial plantations established at the Government Agricultural Stations, after upwards of four years' experimental cultivation, have so far demonstrated the suitability of the climate and soil of the colony for the successful growth of the Pará rubber tree, that some of the larger estates and also corporations organized exclusively for the purpose have begun the setting out of this species of tree on a commercial scale. With these assurances of success, this company purposes to follow the clearing of the forest by the systematic planting of rubber trees."

As regards the results which can be accomplished in rubber planting, the prospectus says: "The company's logging operations will clear about two acres of land per day, or in a year 700 acres. Out of this area, it is a safe assumption that 350 acres will be suitable for planting the superior grades of rubber. Now if the work of planting rubber follows close behind the clearing of the land, the entire 350 acres available will be planted within the first year of the company's operations. At the expiration of the third year, there would be somewhat over 1,000 acres planted with rubber. It is proposed, in this planting, to follow, as closely as local conditions permit, the Ceylon practice, which may be taken as the standard for the scientific growing of this class of rubber tree. After the eighth year there will be a steady increase in production until all trees reach a size sufficient to produce an annual yield of from one to three pounds."

YIELD OF BALATA.

In spite of the rumors of shortage of rain in the interior of the Colony, of which I wrote some time ago, and which I said last month had been substantiated, it appears that the impossibility of bleeding operations being carried out is not general. While it is perfectly true that the members of the expedition of the Demerara Rubber and Produce Co. in the Rupununi District have found the bullet trees on its grants building, and have consequently been unable to bleed them, it is nevertheless correct that balata is coming to town in large quantities from the grants of other parties operating in the same district. Only a few days ago, for instance, no less than 60,000 pounds of balata arrived from the Rupununi grants of Messrs. Bugle & Co., and more large consignments are expected shortly. News regarding the progress of the Demerara Rubber and Produce Co.'s expedition to the Rupununi District is hard to obtain. The director of the company, Mr. R. Morrison, as I wrote last month, has left the Colony. The superintendent of the expedition, Mr. Aethy, who followed Mr. Morrison to town, owing to the bleeders having absconded over the boundary into Brazil, has now left again to return to the bush, but he has not engaged any men to fill the places of those who have absconded.

The exports of balata from the colony continue to show a large increase over those during the corresponding period of last year. The amount shipped between January 1 and early in July was 256,881 pounds, as compared with 35,483 pounds in the same period of 1912.

There was a busy time one day recently at the office of the Official Receiver, when a large number of the creditors of the Amsterdam Balata Co., whose affairs are being administered by the Official Receiver, put in an appearance to receive the

further dividend of 4½ per cent. which has now been declared payable. The creditors consisted entirely of the laborers who were in the service of the company when it failed, and their representatives—their wives and female relatives—attended at the office and were paid on their behalf. The payments varied from thirty-three cents to $8, and the amount disbursed in that way exceeded $500, the proceeds of the sale of the company's property.

A GLIMPSE OF THE EXISTING CONDITIONS IN THE BALATA INDUSTRY IN DUTCH GUIANA.

By a Resident Correspondent.

UPON a recent trip into the interior of the Colony I had an opportunity of witnessing the felling operations carried on by one or two balata companies on their concessions in the Sara Creek district. This interesting method of gathering the latex from the fallen trees would prove highly remunerative to the concessionaires if experienced labor could be obtained, but owing to the fact that most of the workers so engaged are men with little or no practical knowledge of the business, on one hand, and because of a dislike for the method, on the other hand, the system has proved to

BALATA BLEEDERS ON HOLIDAY IN PARAMARIBO, D. G.

be rather costly so far. There is no doubt, however, that if a class of laborers could be procured possessing the necessary knowledge of felling and handling the trees, the present high cost in connection with this method of balata collecting could be greatly reduced. Until expert wood-cutters can be had to do the work, it is my opinion that the industry would be better safeguarded by continuing the old systems, viz.: ladder work and spur climbers. So far, this new craze of cutting down the trees has not brought about any marked increase in the colony's output; on the contrary it has been the source of no end of disputes between masters and servants, government officials and concession holders, and last but not least, it has been the occasion of very strong press comments. What the future has in store—so far as this system is concerned—time alone will prove.

There are many hardships associated with balata collecting in Dutch Guiana, and those who invest in the business can hardly realize the amount of labor and suffering endured by those sturdy sons of Africa, who are sometimes harshly and cruelly treated, and even robbed of their hard earnings for the profit of the speculators. For instance, the contracts (sometimes) drawn up between employer and employe are all one-sided; they are made up entirely in favor of the employer, and the bleeders in most cases are so illiterate as to consent to the terms of agreement without ever reading the contents of the document, having confidence in what is told them. The unfortunate men, eager to obtain the tempting advance, sign their own death warrant; they only realize the injustice when it is too late and the advances are all spent.

Balata contracts are tangled webs in Surinam and some of them have been the cause of much unpleasantness between the British Consul and the Colonial officials, for many of the men are British subjects from the neighboring colony of British Guiana. I do not pretend to say that the balata man is all virtue; he has his shortcomings, and if not watched will very often clear off with an advance, or, if he finds himself heavily indebted to his employer (with no ghost of a chance of clearing off that debt) he will, on opportunity, put many miles between himself and the colony. Notwithstanding this fact, the men are not unreasonable, and only require proper management. The police, who hold a strong arm over the laborers, can arrest them—by the laws of the colony—on the least suspicion. They are, practically speaking, under police supervision from the day they enter into contract with a balata firm; so, as one can see, the investor is thoroughly safe-guarded. Why, then, in the face of such protection, do the companies or individuals employing these men stoop so low as to take advantage of them by drawing up unfair and deceptive contracts? I cannot see the sense in such high-handed methods; they certainly call forth disapproval from all honest people, and cause endless trouble and dissatisfaction when the bleeders are once convinced that they have been "done."

In the early nineties when the industry was booming, Mr. Henry Benjamins (then a partner of the balata firm Von Hemert) was looked upon as a father by the balata bleeders in Surinam. What he said was law, and every man obeyed him implicitly. He was kind and generous, yet firm as a rock, and above board. It is to be deplored that this gentleman has retired from the business; the industry has lost a man who can never be replaced.

It may be interesting to know that the exploitation of a balata concession can safely be left entirely to the black foremen, who will get out of the laborer all that he is capable of accomplishing. Moreover, the men are docile; few or no quarrels occur among them, and obedience is secured without force or threats. Another subject of congratulation is the honest accounting for and security of every pound of balata taken from the concessions, and its absolutely safe transportation from the bush to the consignee at Paramaribo.

Looked at in whatever light we choose, we are driven to the conclusion that there is no place in tropical America where law and order and the rights of capital are more sacredly regarded than in Dutch Guiana, which is all the more reason why the companies should not resort to measures for robbing the laborer by means of dishonest contracts.

If the balata industry is to flourish in future, a better understanding between employer and laborer must be effected. It is painful to think that by the unscrupulous actions of some of the concerns the balata industry, which promises so much, may be destroyed, if proper legislation does not step in and correct the present iniquitous state of affairs.

With proper men at the head of companies, and suitable weather conditions, Dutch Guiana could produce enormous quantities of balata. For instance, from January 1 to April 30, 1912, when the drought was at its height, even then, the colony produced 7,750 kilograms (17,050 pounds). The weather conditions are somewhat better this year, but not yet satisfactory; still the production from January 1 to April 30 has been 83,343 kilograms (183,354 pounds), an increase of 75,593 kilograms (166,304 pounds) over the same period in 1912. This alone is sufficient proof that Dutch Guiana is a balata producer of no mean order, if she is only given a fair chance. With the advent of fresh blood, backed by sufficient capital, I predict quite a brilliant future for her balata industry.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JUNE 3, 1913.

No. 1,063,196. Automobile tire. W. F. Haas, Hartford, Conn.

1,063,205. Noiseless sole. E. L. Leonard, Woodward, Okla.

1,063,221. Tire. H. C. Seipp, Pittsburgh, Pa.

1,063,256. Life preserver. C. M. Hannis, Hudson, Mass.

1,063,290. Tire protector. J. T. Ryan, Vallejo, Cal., assignor to American Tire Armor Co., Phoenix, Ariz.

1,063,291. Armored pneumatic tire. J. T. Ryan, Vallejo, Cal., assignor to American Tire Armor Co., Phoenix, Ariz.

1,063,301. Pencil holder. H. W. Thomas, Charleroi, Pa.

1,063,359. Spring-rim for wheels. W. A. Langjahr, Plymouth, Wis.

1,063,407. Pneumatic horse collar. F. Batcheler, Bomarton, Tex.

1,063,465. Spring wheel. O. J. Olson, Courtenay, N. D.

1,063,480. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio.

1,063,500. Demountable vehicle rim. P. B. Bdsworth, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,063,531. Rim construction. J. A. Glenn, Albany, N. Y.

1,063,578. Tire or tread therefor. W. R. Morrison, Chicago, Ill.

1,063,594. Resilient vehicle wheel. W. M. Resse, Los Angeles, Cal.

1,063,648. Demountable rim for vehicle wheels. J. W. Broderick, Newark, N. J.

1,063,737. Milking machine. R. D. Roth, Gettysburg, Pa.

1,063,838. Tire patching tool. W. O. Shaw, St. Paul, Minn.

1,063,888. Tire. V. Lindholm, Hoquiam, Wash.

1,063,892. Vehicle wheel. T. Poss, Aurora, Ill.

1,063,922. Abdominal belt or supporter. A. B. Kendrick, East Orange, N. J., assignor to J. R. Kendrick Co., Inc. Philadelphia, Pa.

Trade Marks.

67,915. Girten-Myers Supply Co., Houston, Tex. The word *Alamo*. Rubber hose, packing and valves.

69,594. Glocker Sanitary Jar Co., Wilmington, Del. The initials *O. K.* Fruit jar rings.

70,161. "Semperit" Oesterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna XIII, Austria. The word *Semperit*. Rubber erasers.

70,214. M. & S. Peller, New York. The word "Duckend." Suspenders.

ISSUED JUNE 10, 1913.

1,063,972. Vehicle tire. J. C. Hollings, assignor to F. S. Alden, Boston, Mass.

1,064,035. Tire making machine. T. J. Whalen, New Brunswick, N. J., assignor to Harry M. Marble, Newark, N. J.

1,064,051. Toy effigy. M. M. Buckler, Springfield, Mass.

1,064,066. Vehicle wheel rim. R. W. Funk, Weehawken, N. J., assignor to R. W. Funk, Inc., New York.

1,064,097. Cushion tire. M. J. Selzer, Akron, Ohio.

1,064,100. Tire protector. C. A. Smith, New Orleans, La.

1,064,119. Vehicle tire. W. E. Anderson, St. Louis, Mo.

1,064,128. Vehicle wheel. J. Callan, Ray, Ariz.

1,064,129. Resilient wheel. W. L. Chrysler, Eugene, Ore., assignor to Portland Automobile Wheel Co., Portland, Ore.

1,064,189. Vehicle wheel. M. Berardini, Philadelphia, Pa.

1,064,212. Attaching device for rubber heels. A. B. Heimbach, Duluth, Minn.

1,064,240. Combined aeroplane and dirigible balloon. N. W. Mohr, San Francisco, Cal.

1,064,342. Demountable rim. J. D. Kennedy, New Kensington, Pa.

1,064,381. Resilient tire. M. C. Rogers, Williams, Cal.

1,064,391. Pneumatic tire. E. Stanley, Des Moines, Iowa.

1,064,395. Pneumatic cushioning device for vehicles. C. L. Sutton, Oakland, Iowa.

1,064,438. Spring wheel. F. W. Bristow, Dorrisville, Ill.

1,064,489. Milking machine. R. Kennedy, Glasgow, Scotland.

1,064,526. Automatic relief valve for pneumatic tires. S. P. Noe, Ocean Grove, N. J.

1,064,611. Tire. W. G. Chipley, New Orleans, La., assignor to Pneumatic Rim & Tire Co., Wilmington, Del.

1,064,643. Plug for tires. D. P. Harris, New York.

1,064,661. Unperforable metallic band for tires. G. A. V. Longuemare, Ste. Adress, France.

Design.

44,164. Tire. W. R. Blowers, Toronto, Ont., Canada.

Trade Mark.

69,817. P. Bailly & Cie, Paris, France. The word *Guyot*. Shoulder braces and suspenders.

ISSUED JUNE 17, 1913.

1,064,721. Vulcanizing press. J. R. Gammeter, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,064,743. Life preserver. L. F. Kepler, Akron, Ohio, assignor to The B. F. Goodrich Co., New York.

1,064,766. Vehicle tire. L. S. Pfouts, Canton, Ohio.

1,064,769. Preparation for automatically sealing punctures in pneumatic tires. G. H. Price, Queenstown, Cape Colony.

1,064,862. Hose connection for lawns. J. S. Sharp, Honolulu, Hawaii.

1,064,883. Hose reel. E. Bergland, Madras, Ore.

1,064,896. Spring wheel. C. D. Freeman and R. W. Cheesbrough, Bogus, Cal.

1,064,903. Body brace with suspender attachment. T. B. Hardiman, Patoka, Ind.

1,065,038. Antileak tire compound. M. F. Fetty, assignor to C. F. Hutchings, Jr.—both of Kansas City, Mo.

1,065,084. Chain mat for wheel tires. C. E. Smith, Bridgeport, Conn., assignor to The Walker Tire Chain Co., Toledo, Ohio.

1,065,139. Tire fastening device. J. J. Kelly, Crafton, Pa.

1,065,162. Airless and punctureless automobile tire. C. E. Miller, Peru, Ind.

1,065,214. Chain mat for resilient tires. M. A. Carter, Granville, N. Y., assignor to The Walker Tire Chain Co., Toledo, Ohio.

1,065,256. Fountain tooth brush. H. Cheesman La Mar, Harrison, Ohio.

1,065,307. Vacuum sticker or attaching device. J. P. Everttts, Sayre, Pa.

Trade Marks.

68,365. The Portage Rubber Co., Barberton, Ohio. The word *Daisy*. Rubber vehicle tires.

69,485. Stone-Ordean-Wells Co., Duluth, Minn. The word *Hiawatha*. Fruit jar rings.

70,392. J. W. Buckley Rubber Co., New York. The word *Hydraulic*. Rubber tubing, hose, etc.

ISSUED JUNE 24, 1913.

1,065,758. Device for adjusting tire chains. W. E. Woodwell, Pittsburg, Pa.

1,065,787. Repair device for pneumatic tires, etc. T. C. Dobbins, Los Angeles, Cal.

1,065,836. Inner tube for pneumatic tires. Alfred and Albert Raymond, Washington, D. C.

1,065,849. Pnumatic tire. G. A. Shaw, Barberton, Ohio.

1,065,900. Suspenders. H. C. Hine, assignor to the Traut & Hine Mfg. Co.—both of New Britain, Conn.

1,065,907. Tire. F. W. Redding, Jacksonville, Mo.

Designs.

44,235. Automobile tire. J. Christy, Akron, Ohio.

44,241. Casing for pneumatic tires. F. E. Holcomb, Akron, Ohio, assignor to Consolidated Rubber Tire Co., Trenton, N. J.

44,253. Tire. F. Nolte, Akron, Ohio.

Trade Marks.

69,495. Stone-Ordean-Wells Co., Duluth, Minn. The word *Wampum*. Fruit jar rings.

70,571. Mystic Rubber Co., Medford, Mass. The initials *D. M. D.* in diamond shape. Hospital rubber sheeting.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 4, 1913.]

3,285 (1912). Tools for replacing elastic tires. T. D. Staples, 1 Coronation Cottages, Exning Road, Newmarket.

*3,311 (1912). Detachable rubber heels. F. A. Nolan, 557 Rondo street, St. Paul, Minn., U. S. A.

3,312 (1912). Substitute for vulcanized rubber. F. C. Schneider, R. Reinecke and E. Knoll, Leipzigerstrasse, Meiningen, Germany.

3,396 (1912). Air tubes for tires. E. Andrieu, 1 Place de la Gare, Roubaix, France.

3,411 (1912). Rubber connection for sandals. R. Weidt, 54 Lerchenfelderstrasse, Vienna.

*3,430 (1912). Detachable rubber heels. F. A. Nolan, 557 Rondo street, St. Paul, Minn., U. S. A.

3,455 (1912). Flexible rubber hood held by umbrella stick. S. and W. Griffiths, 4 Swan Court, and T. L. Barlow, 15 Penzance street, Hulme Hall Lane, Newton Heath—both in Manchester.

3,653 (1912). Rubber toe spreading device. F. J. Scholl, 5 Manchester avenue, London.

3,755 (1912). Puncture closing apparatus. J. Eilers and J. Hinrichs, 9 Milchstrasse, Oldenburg, Grand Duchy of Oldenburg, Germany.

3,835 (1912). Detachable rim for wheels. F. W. Brampton, Abbots Croft, Sion Hill, Kidderminster.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 11, 1913.]

3,940 (1912). Air tubes for tires. J. J. D. Cleminson, 73 Cheapside, London.

3,945 (1912). Heel protectors. S. Sokal, 14 Southampton Bldgs., London.

3,989 (1912). Rotary duplicators. G. A. W. Rushworth, Great Western street, Moss Side, Manchester.

4,062 (1912). Lubricating and inflating pumps. A. Jaekel, 24 Rue Spontini, Paris.

*4,109 (1912). Rubber ring for spring wheels. C. D. Galvin, Merchantville, N. J., U. S. A.

4,210 (1912). Feeding bottles. A. Prox, 6 Hough Lane, Leyland, near Preston, Lancashire.

4,212 (1912). Molding india-rubber, etc., by dipping. W. Heaton, 54 Town Gate, Leyland, Lancashire.

*4,287 (1912). Molding tires. A. Adamson, Akron, Ohio, U. S. A.

*4,291 (1912). Puncture closing apparatus. T. C. Dubbins, 211 West 32d street, Los Angeles, Cal., U. S. A.

4,317 (1912). Tread bands. T. Caudwell, 30 Denham Road, Ecclesall Road, Sheffield.

4,332 (1912). Use of rubber in imitation leather. H. Jackson, Oakenclough Paper Mills, Garstang, Lancashire.

4,395 (1912). Rubber layers in tires. S. C. Caddy, Rook Hill House, Keynsham, near Bristol.

*4,415 (1912). Pneumatic rubber ring for spring wheels. F. Morris, 2912 Farnam street, Omaha, Neb., U. S. A.

4,567 (1912). Rubber tapping knives. P. A. Reuss, 169 West street, Sheffield.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 18, 1913.]

4,600 (1912). Pads for chair legs, etc. D. Andreessen, Walle, near Aurich, Germany.

4,628 (1912). Device for inflating tires. W. Hall, near Barker's Farm, South Lopham, and E. Warren, Hopton—both in Thetford, Norfolk.

4,725 (1912). Direct vulcanization of solid tires. A. C. Stevenson, 83 Camperdown Road, Scotstoun, Renfrewshire.

4,833 (1912). Improved appliance for tapping. J. J. Hutton, Newlands, Ridgeway, near Sheffield.

4,866 (1912). Reinforced beads for tires. C. Burnett, Belmont House, Durham.

4,944 (1912). Use of powdered aluminium in resilient compositions. C. H. Wilkinson, Chapel Hill Mill, Hudderafield, Yorkshire.

4,985 (1912). Use of intercoiled wire in tires. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tyre Syndicate, Broad Street House, London.

5,078 (1912). Improvements in abdominal belts. M. J. W. Lumley, 67 Gloucester street, Warwick Square, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 25, 1913.]

5,234 (1912). Intertwined ring effects in golf balls. British Murac Syndicate, and M. N. Dessau, 17 Mincing Lane, London.

5,346 (1912). Use of prepared chalk for closing punctures. F. K. Loewenthal, 40 Synagogue Road, Kimberley, South Africa.

5,350 (1912). Waterproof cement for leather. F. Rampichini, 7 Via delle Acque, Trieat, Austria.

5,421 (1912). Layers of rubber in heels. H. Bruhlmann, 42 Zurcherstrasse, Winterthur, Switzerland.

5,430 (1912). Products similar to vulcanized caoutchouc. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

5,535 (1912). Tire building machine. P. A. Newton, 6 Breams Bldgs., Chancery Lane, London.

5,567 (1912). Rubber facing rings in valves. R. Ames, 145 Ditchling Road, Brighton.

5,619 (1912). Thumb stall for barbers. C. Davies, 15 High street, Cowbridge, Glamorganshire.

5,667 (1912). Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

*5,678 (1912). Rubber buffers in wheels. E. M. Deal, 5713 Spruce street; J. J. Scheiter, 1957 N. 23rd street, and E. A. Schneider, 2217 N. Howard street—all in Philadelphia, Pa., and L. B. Wilson, Sykesville, Md.—all in U. S. A.

5,705 (1912). Air tight rubber tubes for attachment to boats. C. L. Menzel, Nobby, Queensland, Australia.

5,718 (1912). Improvement in solid rubber treads. J. Elias, 96 Regent Road, Salford, Manchester.

5,769 (1912). Improvement in bottle stoppers. L. M. Pink, Staple street, Borough, London.

5,802 (1912). Impregnation of packing cord. O. Jordan, 36 Goethe Strasse, Hamburg, Germany.

5,847 (1912). Waterproof coverings for cycle saddles. W. Thomson, Lockwood avenue, Poulton-le-Fylde, and W. Thomson, 3 Taylor street, Atherton—both in Lancashire.

5,901 (1912). Compound woven beltings. H. F. Wragg, 115 Holly Road, Handsworth, Birmingham.

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

261,625 (April 13, 1912). Elastic tires with protected inner portion of rubber or the like. Alfred Steinhauser, Philadelphia, U. S. A.

261,679 (June 10, 1911). Improvements in parachutes. Karl Schultze, Berliner Strasse 28, Berlin-Pankow.

261,921 (January 4, 1912). Process for manufacture of rubberized fabrics. Erik Mündel & August Kurpneek, Riga, Russia.

261,876 (May 31, 1912). Process for manufacture of erythrene and isoprene. Farbenfabriken, vorm. F. Bayer & Co., Leverkusen.

261,951 (January 4, 1912). Vulcanizing apparatus for improvement of rubber tires. Cecil F. Adamson, Akron, U. S. A.

262,093 (December 13, 1911). Process for manufacture of a mass resembling rubber. Georges Reynaud, Paris.

262,137 (September 11, 1912). Tires composed of separate perforated rubber blocks. Maurice Dechamps, Brussels.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

451,508 (December 4, 1912). V. Boutier. Non-bursting armored anti-skid tread for pneumatic tires.

451,551 (December 6). H. Graveley. Mud guard for wheels of automobiles and other vehicles.

451,576 (December 7). E. Clark & C. N. L. Winter-Irving. Improvements in manufacture of pneumatic tires and covers.

451,579 (December 7). L. Gerard & G. Hidoux. Elastic tire for vehicles.

451,598 (February 15). C. Donaudy. Improvements in cellular air chambers for pneumatic tires.

451,613 (December 9). E. Charles. Anti-skid system for heavy loads.

451,615 (December 9). M. Kaufmann. Rubber piece for toes of footwear, and process of manufacture.

451,661 (December 10). D. L. Crosbie. Elastic wheel.

451,770 (December 11). W. H. Crawford. Elastic wheel tire.

451,787 (December 11). N. Isambert. Pneumatic tire with protected air chamber.

451,845 (December 13). C. Foldessy & C. G. Ashmore. Elastic tire with certain movable parts.

451,916 (December 14). E. M. Dubus. Pneumatic tire, with air chamber protected by perforations.

452,018 (December 18). E. Chassenet. Protective foundation of rim for pneumatic tires.

452,111 (November 28). A. Serenne. Instantaneously adjusted pneumatic tire.

452,141 (December 4). A Brasseur. Non-bursting tire for automobiles, motorcycles and bicycles.

452,006 (December 17). Farbenfabriken, vorm F. Bayer & Co. Process for production of substance resembling rubber.

452,015 (December 18). R. Bobet. Hot air vulcanizer.

452,277 (December 21). A. Olier & Co. Appliance for automatic adjustment of vulcanizing presses.

452,291 (December 23). A. Rokkel. Metallic toe for footwear with interior interchangeable piece of rubber or other substance.

452,440 (December 27). A. Amelot. Vehicle tires.

452,456 (December 27). W. E. Muntz. Improvements in pneumatic tires.

452,483 (December 28). K. Klotzmann and B. Klotzmann. Mud guard for automobiles.

452,506 (December 30). C. Chaigneau and M. Breillat. Movable anti-skid cover for pneumatic tires.

452,562 (December 10). R. C. Hulbert. Improvements in regulators of electric appliances; specially for vulcanizers.

452,389 (December 26). S. Saul. Rubber heels, adapted for use with press buttons.

452,497 (December 28). W. Eggers. Improved mold for manufacture of rubber goods.

452,580 (March 9). G. Fretard. Elastic vehicle tire.

452,772 (December 31). J. M. Laforet. Improvements in wheels with twin pneumatic or other tires.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

A GAUGE FOR MOTORCYCLE RIMS.

The dealer in motorcycles has been considerably puzzled during the last few years to know what tire should go on what rim; for there have been three standard motorcycle rims, the "Old Style," the "B B" and the "C C." But this puzzle has been solved for the dealer by a gauge which instantly tells what size of tire should be used on any particular rim. The gauge is herewith illustrated. It is necessary simply to insert this gauge into the rim to get at the correct gauge length. The proper size tire to go with that rim is noted on the section of the gauge that fits the rim. This gauge is a Goodyear invention and is supplied to those in the trade interested in motorcycle rims, on application. [The Goodyear Tire & Rubber Co., Akron, Ohio.]

THE GOODYEAR MOTORCYCLE RIM GAUGE.

Report of the Crude Rubber Market.

IT will be recalled that about the end of April fine Pará stood in London at 3*s.* 4½*d.*, while plantation crepe was quoted at 3*s.* 2½*d.* By the end of May the prices were respectively 3*s.* 8½*d.* and 3*s.* 2¼*d.*, the Brazilian article having gained 4*d.* within the month, while plantation rubber was practically unchanged. By June 25 a still wider discrepancy was reported, owing to a fall in the Asiatic product, which stood on June 25 at 2*s.* 11*d.*, as compared with 3*s.* 8¾*d.* for fine Pará.

During the month of July fine Pará fluctuated between 3*s.* 8½*d.* and 3*s.* 10*d.* A downward tendency prevailed, however, during the latter part of the month. The highest point touched was 3*s.* 10*d.* on the 16th, the other stages reached being: 3*s.* 9½*d.* on the 17th, 3*s.* 9*d.* on the 19th, 3*s.* 8½*d.* on the 23rd., 3*s.* 8*d.* on the 25th, and 3*s.* 7*d.* on the 26th, at time of writing. Thus, after being relatively steady for the first half of the month, the market has fallen 3*d.* within the last ten days.

Plantation crepe, which stood on June 25 in London at 2*s.* 11*d.*, reached 2*s.* 8¾*d.* (its lowest point for July) on the 9th. After a slight recovery it closed on the 26th at 2*s.* 9½*d.*, while fine Pará was at 3*s.* 7*d.* In other words, the premium on fine Pará now stands at 9½*d.*, as compared with 9¾*d.* a month ago.

That supplies have increased is illustrated by the statistics of the Federated Malay States exports for the six months ending June 30, which show in the last three years: 1911, 8,349,397 pounds; 1912, 15,382,265 pounds; 1913, 23,492,129 pounds. Exports from Ceylon for the first five months of 1913 represented 9,675,521 pounds, against 4,823,253 pounds for the same period of 1912. The records of the London auctions for the first six months of 1913 show a total of 11,202 tons, as compared with 6,821 tons for the earlier half of 1912. Thus no fears are entertained of a shortness of supply.

The plantation auction of July 1 included 445 tons, and tho the relative smallness of the quantity had led to anticipations of firmer prices, there was a falling off to the extent of 1*d.* to 2*d.* per pound. This situation was attributed to the lack of confidence in the financial prospect, rather than to the statistical position of the article.

At the sales of July 15, the quantity offered was 646 tons, which, tho larger than that of the previous sale, met with a good demand at 1*d.* to 1½*d.* above the price current in the recent private market.

The Havre auction of June 26 included 47 tons, principally Congo, of which six tons were sold with a reduction of 12½ per cent. About 40 tons were declared for the sale of July 30.

For the Amsterdam sale of July 10 there had been announced 59 tons *Hevea*, which realized 13 per cent. below valuations, and 17 tons *Ficus*, which sold at 18 per cent. reduction. Satisfaction has been expressed at the offerings being sold, though at reduced prices.

At the Rotterdam sale of July 4 about 25 tons were offered, including 15 tons *Hevea* and 9 tons *Ficus*. Nearly all the lots were sold at a reduction on valuations.

The Antwerp sale of June 25 included 53 tons Congo and 21 tons plantation. Of the former, 20 tons were sold, and of the latter a similar quantity, at prices unsatisfactory to holders.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York one year ago, one month ago, and July 30—the current date:

PARA.	August 1,'12.	July 1,'13.	July 30,'13.
Islands, fine new	107@108	82@83	74@
Islands, fine, old	109@110	.....	.....
Upriver, fine, new	117@118	87@88	85@86
Upriver, fine, old	122@123	.....	92@93
Islands, coarse, new	56@ 57	34@35	30@31
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	90@ 91	54@56	51@52
Upriver, coarse, old	.....	.....	39@40
Cametá	65@ 66	42@43	37@38
Caucho (Peruvian) ball	88@ 89	53@54	51@52
Caucho (Peruvian) sheet	76@ 77	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	120@121	72@73	70@71
Fine pale crepe	121@122	70@72	68@69
Fine sheets and biscuits	117@118	70@71	.....
CENTRALS.			
Esmeralda, sausage	83@ 84	53@54	52@
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	81@ 82	53@54	52@
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	81@ 82	53@57	52@
Mexican, slab	.....	.....	35@
Mangabeira, sheet	.....	.....	.....
Guayule	57@	.....	.....
Balata, sheet	.....	.....	70@72
Balata, block	.....	.....	51@53
AFRICAN.			
Lopori, ball, prime	108@109	.....	62@
Lopori, strip, prime	.....	.....	60@
Aruwimi	103@104	.....	55@57
Upper Congo, ball red	105@106	.....	55@56
Ikelemba	.....	.....	57@58
Sierra Leone, 1st quality	95@ 96	.....	55@58
Massai, red	98@ 99	.....	62@63
Soudan Niggers	.....	.....	50@55
Cameroon, ball	.....	.....	40@49
Benguela	.....	.....	.....
Madagascar, pinky	.....	.....	55@60
Accra, flake	27@	.....	24@25
EAST INDIAN.			
Assam	.....	.....	35@70
Pontianak	6@6⅛	.....	6¼@6⅝
Borneo—III.	.....	.....	32@30
" — II.	.....	.....	45@48
" — I.	.....	.....	55@60

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During July the demand for commercial paper has continued light, and almost entirely from out of town banks, the same as in June; rates have ruled very firm at 6@6½ per cent. for the best rubber names."

NEW YORK PRICES FOR JUNE (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$0.87@ .92	$1.08@1.12	$0.95@1.03
Upriver, coarse	.54@ .62	.86@ .91	.81@ .85
Islands, fine	.82@ .85	1.01@1.06	.91@ .98
Islands, coarse	.33@ .39	.55@ .59	.58@ .63
Cametá	.40@ .43	.63@ .65	.67@ .71

Statistics Para India Rubber (in Tons) Including Caucho.

STATISTICS FOR THE MONTH OF JUNE.

	Pará.	Caucho.		1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	1,280	820	=	2,100	against	2,570	1,720	1,200
Shipments to Liverpool	460	270	=	730	"	1,280	1,160	1,050
Shipments to Continental Ports	130	180	=	310	"	590	160	190
Shipments to America	490	320	=	810	"	1,170	920	480
American Imports	940	490	=	1,430	"	1,570	1,510	350
American Deliveries	920	510	=	1,430	"	1,580	1,550	330
Liverpool Imports	663	581	=	1,244	"	737	1,328	1,088
Liverpool Deliveries	641	546	=	1,187	"	927	1,288	1,051
Continental Imports	340	210	=	550	"	400	170	210
Continental Deliveries	390	290	=	680	"	430	150	260

VISIBLE SUPPLY—1ST JULY, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,078	.....	1,000	4,110	1,603
Pará, 2nd hands	106	.....			326
Caucho	...	629	370	990	611
Stock in Pará, 1st hands	310	170	410	1,340	390
2nd hands	290	120	400	420	110
Syndicate	810	.....	2,240	2,760	.....
Stock in America	140	40	170	300	140
Stock on Continent	50	200	100	110	50
Afloat—Europe	350	140	1,350	610	780
Afloat—America	260	170	330	310	250
	3,394	1,469			
Total Visible Supply, including Caucho.	4,863		6,370	10,950	4,260

CROP STATISTICS—30TH JUNE, 1912, 30TH JUNE, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts 1912/13	32,290	9,660	41,950	39,360	37,500	39,130
Pará Receipts 1911/12	32,230	7,130				
Pará Shipments to Europe	17,150	6,740	23,890	20,260	19,910	21,850
Pará Shipments to America	16,230	3,290	19,520	20,570	13,570	17,040
England Landings, net			17,736	14,517	15,678	17,871
England Deliveries, net			17,293	18,217	13,347	16,806
America Landings, net			19,440	22,795	14,770	16,960
America Deliveries, net			19,430	22,525	14,610	17,620
Continental Imports, net			5,120	3,600	3,170	3,090
Continental Deliveries, net			4,965	3,610	3,110	3,070

POSITION—1ST JULY, 1913.

Decrease in Receipts during June, 1913, against June, 1912	470
Increase in Receipts—Crop, July/June, 1912/13, against 1911/12	2,590
Increase in Deliveries—Crop, July/June, 1912/13, England and Continent, against 1911/12	431
Decrease in Deliveries—Crop, July/June, 1912/13, America, against 1911/12	3,095
Decrease in Visible Supply Pará Grades, against 1st July last year	1,507
Increase in Stock, England, June 30th, 1913, against June 30th, 1912.	443

WM. WRIGHT & CO.,
Liverpool, 3rd July, 1913. Brokers.

During the month 120 tons, including 10 tons Caucho, have been shipped from Europe to America.

Amsterdam.

JOOSTEN & JANSSEN report [July 10]:

Considering the recent depressed condition of the market, today's sale may be considered satisfactory. The bulk of the offerings were sold at about the equivalent of market rates.

Rotterdam.

HAVELAAR & DE VRIES report [July 8]:

Prices at sale of 4th were below valuations. Quantity offered included 15 tons *Heves* and 9 tons *Ficus*.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	July 30, '13.
Old rubber boots and shoes—domestic	9 @ 9⅛
Old rubber boots and shoes—foreign	8⅞@ 9
Pneumatic bicycle tires	5 @ 5⅛
Automobile tires	8⅞@ 9
Solid rubber wagon and carriage tires	9 @ 9⅛
White trimmed rubber	10⅝@10¾
Heavy black rubber	4½@ 4⅝
Air brake hose	5¼
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	10⅝@10⅞

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1913. AND 1913.

[IN SHILLINGS AND PENCE PER POUND.]

January 3, 1913	4/7¼	April 18, 1913	3/4¾
January 10	4/6½	April 25	3/4½
January 17	4/6½	May 2	3/5½
January 24	4/5¼	May 9	3/8¾
January 31	4/4	May 16	3/10
February 7	4/2¾	May 23	3/9
February 14	4/3	May 31	3/8½
February 21	4/0½	June 6	3/9¼
February 28	4/0½	June 13	3/9
March 7	3/10¾	June 20	3/8¾
March 14	3/11¼	June 27	3/9½
March 20	3/11	July 4	3/9¾
March 28	3/9½	July 11	3/9½
April 4	3/6¼	July 18	3/9½
April 11	3/4½	July 25	3/8

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

JUNE 24.—By the steamer *Clement* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	20,200	12,100	88,600	28,800=	149,700
General Rubber Co	...	...	31,700	...=	31,700
Meyer & Brown	...	...	...	21,100=	21,100
Meyer & Brown	...	...	31,000	...=	31,000
Henderson & Korn	27,100	6,400	700	4,500=	38,700
Ed. Maurer	15,400	3,600	38,900	4,500=	62,400
Hagemeyer & Brunn	...	4,600	23,800	...=	28,400
	62,700	26,700	214,700	58,900=	363,000
MANAOS.					
Arnold & Zeiss	51,800	9,700	14,600	163,200=	239,300
Ed. Maurer	...	...	3,600	35,300=	38,900
Meyer & Brown	8,100	900	10,900	31,500=	51,400
General Rubber Co	30,600	7,100	8,200	...=	45,900
Henderson & Korn	400	1,300	800	16,500=	19,000
Robinson & Co	12,100	...	700	1,900=	14,700
	103,000	19,000	38,800	248,400=	409,200
Total	165,700	45,700	253,500	307,300=	772,200

July 5.—By the steamer *Stephen*, from Pará and Manáos:

Arnold & Zeiss	41,800	20,100	118,500	85,000=	265,400
General Rubber Co	2,100	...	1,700	...=	3,800
Meyer & Brown	28,700	700	113,000	183,700=	326,100
H. A. Astlett & Co	33,000	10,300	12,200	7,400=	62,900
Ed. Maurer	5,600	400	16,500	...=	22,500
Hagemeyer & Brunn	1,800	3,600	7,300	...=	12,700
Robinson & Co	7,700	300	5,300	...=	13,300
Henderson & Korn	60,000	7,900	32,200	63,600=	163,700
	180,700	43,300	306,700	339,700=	870,400

July 14.—By the steamer *Hubert*, from Pará and Manáos:

Arnold & Zeiss	45,300	10,700	91,600	49,400=	197,000
General Rubber Co	1,400	500	100	...=	2,000
General Rubber Co.	...	...	29,000	7,300=	36,300
Henderson & Korn	24,600	3,600	26,400	...=	54,600
Ed. Maurer	...	...	6,600	...=	6,600
H. A. Astlett & Co	...	...	25,700	...=	25,700
G. Amsinck & Co	7,500	700	56,800	11,200=	76,200
G. Amsinck & Co	4,300	...	2,600	1,700=	8,600
	83,100	15,500	238,800	69,600=	407,000
MANAOS.					
Arnold & Zeiss	43,600	13,800	12,700	16,400=	86,500
Robinson & Co	17,500	600	1,700	109,100=	128,900
Robinson & Co	...	8,100	5,800	31,300=	45,200
Crossman & Sielcken	...	...	5,900	...=	5,900
	61,100	22,500	26,100	156,800=	266,500
Total	144,200	38,000	264,900	226,400=	673,500

July 24.—By the steamer *Christopher* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	2,700	114,000	117,800	1,100=	235,600
General Rubber Co	15,000	2,800	17,200	45,900=	80,900
General Rubber Co	.....	.....	19,800	21,800=	41,600
H. A. Astlett & Co	21,100	5,400	38,900	69,400=	134,800
Henderson & Korn	28,900	3,600	63,400	.....=	95,900
Henderson & Korn	.....	.....	10,600	.....=	10,600
Henderson & Korn	1,100	3,600	21,100	.....=	25,800
	68,800	129,400	288,800	138,200=	625,200
MANAOS.					
Arnold & Zeiss	110,400	700	14,200	43,500=	168,800
General Rubber Co	46,000	7,000	13,000	500=	66,500
General Rubber Co	18,700	5,000	8,600	17,500=	49,800
	175,100	12,700	35,800	61,500=	285,100
	243,900	142,100	324,600	199,700=	910,300

PARA RUBBER VIA EUROPE.

		POUNDS.
JUNE 23.—By the *Carmania*=Liverpool:		
General Rubber Co. (Fine)	6,500	
Arnold & Zeiss (Fine)	45,000	
Arnold & Zeiss (Coarse)	22,500	
Arnold & Zeiss (Caucho Ball)	11,200	
Raw Products Co. (Fine)	15,500	
Raw Products Co. (Coarse)	33,500	134,200
JUNE 24.—By the *Chicago*=Havre:		
Various (Caucho Ball)		15,000
JUNE 21.—By the *Patricia*=Hamburg:		
Wallace L. Gough (Fine)	25,500	
Ed. Maurer (Fine)	28,000	53,500
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Ed. Maurer (Fine)		33,000
JUNE 27.—By the *Mauretania*=Liverpool:		
Arnold & Zeiss (Fine)		45,000
JUNE 27.—By the *Cedric*=Liverpool:		
Raw Products Co. (Coarse)		11,000
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer (Fine)	7,500	
Wallace L. Gough (Fine)	2,500	10,000
JUNE 30.—By the *Mayaro*=Ciudad Bolivar:		
Gen. Export & Com. Co. (Fine)	11,000	
Gen. Export & Com. Co. (Coarse)	5,000	16,000
JULY 5.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	33,500	
Arnold & Zeiss (Coarse)	4,500	
Arnold & Zeiss (Caucho)	33,500	
Robinson & Co. (Fine)	5,000	
Raw Products Co. (Coarse)	12,500	89,000
JULY 5.—By the *Pretoria*=Hamburg:		
Ed. Maurer (Fine)	9,000	
Henderson & Korn (Fine)	5,000	14,000
JULY 8.—By the *Zeeland*=Antwerp:		
Robert Badenhop (Fine)	15,500	
Henderson & Korn (Fine)	15,000	30,500
JULY 9.—By the *President Grant*=Hamburg:		
Wallace L. Gough (Fine)		3,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		POUNDS.
JUNE 20.—By the *Sarnia*=Mexico:		
Meyer & Brown		1,200
JUNE 20.—By the *Colon*=Colon:		
Wessels, Kulenkampff & Co.	1,000	
G. Amsinck & Co.	500	1,500
JUNE 21.—By the *Esperanza*=Mexico:		
G. Amsinck & Co.	4,000	
E. Steiger & Co.	3,500	
J. W. Wilson & Co.	2,200	
General Export & Commission Co.	3,000	
Lawrence Johnson & Co.	4,000	
Harburger & Stack	3,000	
Wessels, Kulenkampff & Co.	1,000	
Lawrence Import Co.	1,000	
Neuss, Hesslein & Co.	500	
Meyer Hecht	500	
American Trading Co.	500	23,200
JUNE 21.—By the *Zacapa*=Colombia:		
G. Amsinck & Co.		1,200
JUNE 23.—By the *Suriname*=Colombia:		
Eggers & Heinlein	500	
R. G. Barthold	300	800
JUNE 23.—By the *Prinz Sigismund*=Colombia:		
Caballero & Blanco	300	
De Lima, Cortissoz & Co.	300	600
JUNE 23.—By the *Vigilancia*=Tampico:		
Continental-Mexican Rubber Co.	*88,000	
H. R. Jeffords	*45,000	
Ed. Maurer	*10,000	*143,000
JUNE 23.—By *El Oriente*=Galveston:		
Various		*11,200
JUNE 24.—By the *Siraola*=Port Limon:		
Manhattan Rubber Mfg. Co.	2,000	
H. B. Beers	2,500	4,500
JUNE 25.—By the *E. L. Boas*=Colon:		
G. Amsinck & Co.	2,000	
H. Wolff & Co.	1,000	3,000
JUNE 26.—By the *Advance*=Colon:		
G. Amsinck & Co.	12,600	
C. E. Griffin	1,800	
Dumarest Bros.	2,000	
Camacho, Roldau & Van Sickel.	1,000	17,400
JUNE 26.—By *El Siglo*=New Orleans:		
Various		5,500
JUNE 26.—By *Kronprinzessin Cecilie*=Hamburg:		
Various		*22,500
JUNE 27.—By *El Sud*=Galveston:		
Various		*6,000
JUNE 27.—By the *Mexico*=Mexico:		
American Trading Co.	300	
G. Amsinck & Co.	700	
H. Marquardt & Co.	9,500	
Various	3,000	13,500
JUNE 27.—By the *Sibiria*=Frontera:		
W. L. Wadleigh		3,000
JUNE 27.—By the *Almirante*=Colon:		
G. Amsinck & Co.	1,500	
R. del Castillo	1,500	3,000
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Arnold & Zeiss		33,500
JUNE 30.—By the *Allemania*=Colombia:		
Caballero & Blanco	1,500	
R. del Castillo	1,500	3,000
JULY 1.—By the *Panama*=Colon:		
G. Amsinck & Co.	1,600	
C. E. Griffin	1,100	
American Trading Co.	1,400	
J. J. Julia & Co.	500	
Commercial Bank-Spanish America	400	5,000
JULY 1.—By the *Trent*=Colon:		
J. S. Sambrada & Co.	4,300	
A. S. Lascelles & Co.	500	4,800
JULY 1.—By the *Comus*=New Orleans:		
Various		1,000
JULY 2.—By the *Guantanamo*=Tampico:		
Arnold & Zeiss	*11,200	
H. R. Jeffords	*45,000	
S. Madero & Co.	*78,500	*134,700
JULY 5.—By the *Baltic*=Liverpool:		
Adolph Hirsch & Co.		7,500
JULY 5.—By the *Monterey*=Mexico:		
E. Steiger & Co.	13,500	
Maitland, Coppell & Co.	2,200	
G. Amsinck & Co.	800	
General Export & Commission Co.	500	
Harburger & Stack	1,500	
L. Johnson & Co.	3,000	
American Trading Co.	700	
Rubber Trading Co.	600	
A. S. Lascelles & Co.	500	
Various	6,500	29,800
JULY 5.—By the *Santa Marta*=Colombia:		
R. del Castillo	2,500	
P. Calvet & Co.	600	
Schulz & Ruckgaber	1,200	
H. Wolff & Co.	300	4,600
JULY 7.—By the *Verdi*=Bahia:		
Adolph Hirsch & Co.		35,000
JULY 7.—By the *Frutera*=Colon:		
A. Rosenthal & Sons	1,500	
General Export & Commission Co.	500	2,000
JULY 7.—By the *Prinz Eitel Friedrich*=Colombia:		
Mecke & Co.	6,500	
Kunhardt & Co.	1,800	
A. Held	1,000	
Pottberg, Ebeling & Co.	3,500	
Various	600	13,400
JULY 8.—By the *Alliance*=Colon:		
Lanman & Kemp	2,200	
Isaac Kubie & Co.	500	
Piza Nephews & Co.	3,000	5,700
JULY 8.—By the *Pastores*=Port Limon:		
A. A. Lindo & Co.	2,500	
Gillespie Bros. & Co.	1,000	3,500
JULY 8.—By the *Carl Schurz*=Colon:		
H. Wolff & Co.		1,000
JULY 10.—By the *Scottish Prince*=Bahia:		
A. Hirsch & Co.		22,500
JULY 11.—By the *Morro Castle*=Mexico:		
E. Steiger & Co.	17,500	
Harburger & Stack	2,500	
G. M. Schmidt	4,500	
General Export & Commission Co.	800	
Maldonado & Co.	500	
Marquardt & Co.	1,000	
American Trading Co.	700	27,500

AFRICAN.

		POUNDS.
JUNE 21.—By the *Celtic*=Liverpool:		
James T. Johnstone & Co.		7,500
JUNE 21.—By the *Patricia*=Hamburg:		
Meyer & Brown	4,500	
Wallace L. Gough	9,000	
Ed. Maurer	22,500	36,000
JUNE 23.—By the *Lapland*=Antwerp:		
Robert Badenhop		5,500
JUNE 23.—By the *Carmania*=Liverpool:		
General Rubber Co.	7,500	
Wallace L. Gough	2,500	10,000
JUNE 24.—By the *Ikbal*=Hamburg:		
Ed. Maurer		22,500
JUNE 25.—By the *Vaderland*=Antwerp:		
Robert Badenhop		8,000
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Meyer & Brown	11,500	
Arnold & Zeiss	12,500	
Ed. Maurer	16,000	
Henderson & Korn	2,200	
Wallace L. Gough	11,200	53,400
JUNE 27.—By the *Cedric*=Liverpool:		
Arnold & Zeiss	4,500	
James T. Johnstone	11,000	15,500
JUNE 28.—By *La Savoie*=Havre:		
Meyer & Brown		11,000
JULY 1.—By the *Gothland*=Antwerp:		
Robert Badenhop		8,500
JULY 2.—By the *Potsdam*=Amsterdam:		
Meyer & Brown		11,500
JULY 5.—By the *Baltic*=Liverpool:		
James T. Johnstone & Co.	11,500	
Various	2,000	13,500
JULY 5.—By the *Philadelphia*=Southampton:		
Arnold & Zeiss		4,500
JULY 5.—By the *Zeeland*=Antwerp:		
Various	6,500	
Robert Badenhop	11,200	17,700
JULY 9.—By the *President Grant*=Hamburg:		
Ed. Maurer	72,500	
Arnold & Zeiss	30,500	
Meyer & Brown	22,500	
Wallace L. Gough	13,500	
Various	56,000	195,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

		POUNDS.
JUNE 20.—By the *Majestic*=Southampton:		
Meyer & Brown	*22,000	
Arnold & Zeiss	*168,000	
Raw Products Co.	*11,000	
Rubber Trading Co.	*18,000	
Ed. Maurer	*33,500	
Various	*67,200	*319,700
JUNE 23.—By the *St. Paul*=Southampton:		
Meyer & Brown	*18,000	
Arnold & Zeiss	*36,000	
Robinson & Co.	*45,000	
Rubber Trading Co.	*4,500	
Ed. Maurer	*22,500	
Various	*44,500	*170,500
JUNE 23.—By the *Rotterdam*=Amsterdam:		
Various		*33,500
JUNE 23.—By the *Rappenfels*=Colombo:		
Ed. Maurer	*42,500	
Meyer & Brown	*10,000	*52,500
JUNE 24.—By the *Minnewaska*=London:		
Meyer & Brown	*70,000	
Charles T. Wilson	*135,000	
Adolph Hirsch & Co.	*7,500	
Wallace L. Gough	*3,500	
E. Boustead & Co.	*13,500	
J. T. Johnstone & Co.	*48,000	
General Rubber Co.	*50,000	
Lunham & Moore	*17,500	
Various	*5,500	*350,500
JUNE 25.—By the *Vaderland*=Antwerp:		
Meyer & Brown		*28,000
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Wallace L. Gough		*4,000
JUNE 26.—By the *Oceanic*=Southampton:		
Meyer & Brown	*11,200	
New York Commercial Co.	*205,000	
Arnold & Zeiss	*11,200	
Goodyear Tire & Rubber Co.	*40,000	
Henderson & Korn	*4,500	
W. Stiles	*4,500	
Ed. Maurer	*7,500	*283,900
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Wallace L. Gough		*15,500
JUNE 30.—By the *Indrani*=Singapore:		
Ed. Maurer	*67,000	
Henderson & Korn	*50,000	
Malaysian Rubber Co.	*30,000	
L. Littlejohn & Co.	*12,500	
E. Boustead & Co.	*11,200	
General Rubber Co.	*11,200	
Meyer & Brown	*11,200	
Various	*10,000	*203,100

JULY 1.—By the *Kroonland*=Antwerp:

Meyer & Brown	*46,000	
Wallace L. Gough	*13,500	*59,500

JULY 1.—By the *Minnetonka*=London:

Meyer & Brown	*64,000	
James T. Johnstone	*26,000	
New York Commercial Co.	*52,000	
Charles T. Wilson	*37,500	
Henderson & Korn	*11,200	
A. W. Brunn	*4,500	
Raw Products Co.	*1,700	
Rubber Trading Co.	*3,500	
W. R. Grace & Co.	*1,500	
Ed. Maurer	*13,500	
Goodyear Tire & Rubber Co.	*115,000	
Various	*35,000	*365,400

JULY 2.—By the *Olympic*=Southampton:

Meyer & Brown	*30,700	
Arnold & Zeiss	*112,000	
New York Commercial Co.	*11,200	
Robinson & Co.	*13,500	
Raw Products Co.	*6,000	
Charles T. Wilson	*56,000	
Henderson & Korn	*17,500	
W. Stiles	*6,000	
Various	*67,200	*320,100

JULY 2.—By the *Potsdam*=Amsterdam:

Meyer & Brown	*37,500	
Rubber Trading Co.	*25,000	
Various	*8,200	*70,700

JULY 5.—By the *Philadelphia*=Southampton:

Meyer & Brown	*7,500	
Ed. Maurer	*13,500	
Arnold & Zeiss	*40,000	
Raw Products Co.	*3,000	
Charles T. Wilson	*56,000	
W. Stiles	*3,500	
Various	*50,000	*173,500

JULY 7.—By the *New Amsterdam*=Amsterdam:

Meyer & Brown	*22,600	
Manhattan Rubber Mfg. Co.	*6,000	*28,600

JULY 8.—By the *Zeeland*=Antwerp:

Meyer & Brown	*22,200	
Arnold & Zeiss	*13,500	
Various	*6,000	*41,700

JULY 8.—By the *Minneapolis*=London:

Meyer & Brown	*77,000	
General Rubber Co.	*65,000	
Wallace L. Gough	*11,200	
James T. Johnstone	*17,500	
E. Boustead & Co.	*5,000	
Henderson & Korn	*78,000	
Various	*17,500	*271,200

JULY 9.—By the *President Grant*=Hamburg:

Ed. Maurer		*7,500

JULY 10.—By the *Majestic*=Southampton:

Meyer & Brown	*12,300	
Arnold & Zeiss	*11,200	
Charles T. Wilson	*3,500	
Robinson & Co.	*6,500	
Henderson & Korn	*20,500	*54,000

BOSTON ARRIVALS.

IMPORTS IN MAY, 1913.

	Pounds.	Value.
Gutta-jelutong from Straits Settlements	2,164,896	$112,676
India-rubber from Straits Settlements	36,233	21,533
France	7,354	5,293
Germany	3,662	2,436
England	37,178	34,445

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JUNE, 1913.

Imports:	Pounds.	Value.
India-rubber	8,713,314	$6,078,111
Balata	27,681	15,815
Guayule	624,353	299,105
Gutta-percha	65,352	11,614
Gutta-jelutong (Pontianak)	756,508	36,008
Total	10,187,208	$6,445,653
Exports:		
India-rubber	60,010	31,382
Balata	.....	.....
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	46,198	10,440
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,398,802	$218,531
Rubber scrap, exported	493,929	72,589

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR THE FIRST SIX MONTHS OF 1913 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Total exported.	Stock in Pará on 30th June, 1913.	GRAND TOTAL.
Zarges, Berringer & Co.—Pará; Zarges, Ohliger & Co.—Manáos	1,136,597	149,845	1,113,194	620,671	3,020,307	2,593,115	485,459	540,329	2,055,228	5,674,131	8,694,438	150,000	8,844,438
General Rubber Co. of Brazil—Pará and Manáos	625,204	97,974	464,859	470,519	1,658,556	562,889	185,901	129,832	680,235	1,558,857	3,217,413	25,000	3,242,413
R. O. Ahlers & Co.—Pará; Ahlers & Co.—Manáos	452,456	76,716	160,934	382,287	1,072,393	818,721	91,682	212,899	421,594	1,544,896	2,617,289	.....	2,617,289
J. Marques—Pará	590,246	146,426	784,802	319,041	1,840,515	321,663	19,425	66,861	135,049	542,998	2,383,513	80,000	2,463,513
Suarez Hermanos & Co., Ltd.—Pará	.....	.....	.....	.....	.....	749,175	26,890	139,860	402,226	1,318,151	1,318,151	.....	1,318,151
Ad. H. Alden, Ltd.—Pará-Manáos	459,409	124,178	189,136	100,502	873,225	172,802	21,796	41,342	56,892	292,832	1,166,057	.....	1,166,057
De Lagotellerie & Co.—Pará-Manáos	141,274	7,580	50,840	4,200	203,894	390,632	94,052	131,224	109,606	725,514	929,408	.....	929,408
Green & Co.—Pará; W. Peters & Co.—Manáos	101,290	25,474	48,609	122,367	297,740	11,787	10,235	25,315	30,643	77,980	375,720	.....	375,720
Pires Teixeira & Co.—Pará	34,170	13,430	99,000	560	147,160	109,820	2,040	1,320	.....	113,180	260,340	15,000	275,340
J. G. Araujo—Manáos	1,600	160	1,850	.....	3,610	46,372	3,973	61,349	14,168	125,862	129,472	.....	129,472
Armazens Andresen — Manáos	.....	.....	.....	.....	.....	24,160	5,600	8,600	440	38,800	38,800	.....	38,800
Sundry exporters	31,214	2,299	39,608	23,459	96,580	122,954	4,271	73,406	334,518	535,149	631,729	.....	631,729
	3,573,460	644,082	2,952,832	2,043,606	9,213,980	5,924,090	951,324	1,432,337	4,240,599	12,548,350	21,762,330	270,000	22,032,330
From Itacoatiara, direct	2,400	150	2,160	1,800	6,510	40,850	5,050	29,925	19,670	95,495	102,005	.....	102,005
From Iquitos, direct	13,998	201	2,600	3,222	20,021	268,627	9,142	94,203	577,459	949,431	969,452	.....	969,452
Stock in first hands in Pará	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	483,000	483,000
From Manáos on board S.S. *Hubert*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	132,000	132,000
Stock held by Syndicate J. Marques	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	810,000	810,000
	3,589,858	644,433	2,957,592	2,048,628	9,240,511	6,233,567	965,516	1,556,465	4,837,728	13,593,276	22,833,787	1,695,000	24,528,787

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR FIRST SIX MONTHS OF 1913 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL. Europe & America.	Stock. Tons.	GRAND TOTAL.
Zarges, Ohliger & Co.	578,266	53,602	256,814	275,319	1,164,001	955,775	173,562	162,723	1,125,092	2,417,152	3,581,153	25	3,606,153
Ahlers & Co.	421,059	77,012	147,946	248,854	894,871	597,259	91,386	169,681	383,932	1,242,258	2,137,129	...	2,137,129
General Rubber Company of Brazil	235,976	41,604	164,793	202,730	645,103	283,570	126,628	87,166	457,568	954,932	1,600,035	110	1,710,035
De Lagotellerie & Co.	86,194	.....	.....	.....	86,194	390,632	94,052	131,224	109,606	725,514	811,708	...	811,708
Adelbert H. Alden, Ltd.	271,681	89,092	101,051	83,640	545,464	18,770	3,910	2,641	27,083	52,404	597,868	...	597,868
W. Peters & Co.	62,758	22,004	19,868	121,247	225,877	9,569	7,703	20,926	23,291	61,489	287,366	...	287,366
J. G. Araujo	1,600	160	4,779	.....	6,539	46,372	3,973	61,349	14,168	125,862	132,401	...	132,401
Semper & Co.	.....	.....	.....	.....	.....	35,464	1,120	12,816	30,291	79,691	79,691	...	79,691
B. Levy & Co.	.....	.....	.....	.....	.....	14,502	1,616	12,235	31,283	59,636	59,636	...	59,636
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	58	527	5,474	38,988	45,047	45,047	...	45,047
Sociedade Anonyma "Armazens Andresen"	.....	.....	.....	.....	.....	24,160	5,600	8,600	440	38,800	38,800	...	38,800
Mesquita & Co.	.....	.....	.....	.....	.....	4,369	1,182	6,405	9,457	21,413	21,413	...	21,413
Sundries	11	.....	27	5,245	5,283	17,332	240	3,531	19,868	40,971	46,254	...	46,254
	1,657,545	283,474	695,278	937,035	3,573,332	2,397,832	511,499	684,771	2,271,067	5,865,169	9,438,501	135	9,573,501
Iquitos, direct	13,998	201	2,600	3,222	20,021	268,627	9,142	94,203	577,459	949,431	969,452	...	969,452
Total	1,671,543	283,675	697,878	940,257	3,593,353	2,666,459	520,641	778,974	2,848,526	6,814,600	10,407,953	135	10,542,953

SUMMARY OF DIRECT EXPORTS FROM MANAOS AND IQUITOS.

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1880	374	1886	1,574	1892	3,812	1898	7,173	1904	17,415	1910	19,548
1881	207	1887	1,688	1893	4,745	1899	7,853	1905	17,352	1911	18,689
1882	430	1888	2,141	1894	3,953	1900	8,937	1906	16,840	1912	20,188
1883	655	1889	3,255	1895	5,433	1901	16,826	1907	19,924		
1884	1,013	1890	3,693	1896	6,827	1902	15,162	1908	20,540		
1885	1,462	1891	3,991	1897	7,523	1903	18,277	1909	19,412		

INDIA RUBBER WORLD

Vol. 48. AUGUST 1, 1913. No. 5.

TABLE OF CONTENTS.

Editorial:

The Practicability of Rubber Pavements 553
Prizes for New Uses of Rubber 554
Guaranteeing the Unguaranteeable 554
Depending on the Point of View 555
The Debt to the Chemist 555
Minor Editorial 555

Rubber in Argentina ..... *By the Editor* 556
[With 8 Illustrations.]

Brazilian Rubber Exports 558

Dr. Muller Holds a Farewell Reception 559
[With Illustration.]

The Para Rubber Congress and Exhibition 560

Rubber at the Ghent Exhibition 561
[With Illustration.]

Lamp Black and Carbon Black 562

Notes on the Acclimatization and Cultivation of the Guayule ..... *By Prof. Francis E. Lloyd* 563
[With 1 Portrait and 5 Illustrations.]

Proofers Want Protection Against Dishonest Practices 566

The Rubber Trade in Boston ..... *Our Correspondent* 567

The Rubber Trade in Akron ..... *Our Correspondent* 568
[With 1 Illustration.]

The Rubber Trade in Rhode Island ..... *Our Correspondent* 569

The Rubber Trade in San Francisco ..... *Our Correspondent* 570

The Rubber Trade in Trenton ..... *Our Correspondent* 570

The Annual Midsummer Outing of The Rubber Club of America 571
[With Illustration.]

The Hodgman Glen Island Outing 573
[With 2 Illustrations.]

New Trade Publications 574

Editor's Book Table 575

Non-Skid Shoes for Dancing 576
[With Illustration.]

Balata Belting as Viewed by an Expert 576

Obituary Record 577
[With 3 Portraits.]

The Rubber Industries of New Jersey 579

New Rubber Goods in the Market 580
[With 11 Illustrations.]

News of the American Rubber Trade 582

India-rubber Goods in Commerce 587

The India Rubber Trade in Great Britain ..... *Our Regular Correspondent* 588

Rubber Paving in London 589

The Future of the Rubber Industry 589

To Encourage New Uses of Rubber 590

Direct Shipments of Rubber to New York 590

Some Rubber Interests in Europe 591

Annual Report of Henriques Laboratory, Berlin 592

Austrian Talc Association 593

The Rubber Trade in Japan ..... *Our Regular Correspondent* 593

Some Rubber Planting Notes 594

The Tropical Agricultural College 595

Belgian Rubber Interests in Malaya and Sumatra 595

Hevea Rubber in British Guiana 596
[With 2 Illustrations.]

Rubber Notes from British Guiana ..... *Our Regular Correspondent* 596

A Glimpse of the Existing Conditions in the Balata Industry in Dutch Guiana ..... *A Resident Correspondent* 597
[With 1 Illustration.]

Recent Patents Relating to Rubber 598
[United States, Great Britain, France, Germany.]

Report of the Crude Rubber Market 600

Antwerp.

RUBBER STATISTICS FOR JUNE, 1913.

	1913.	1912.	1911.	1910.	1909.
Stocks, May 31..*kilos*	1,053,993	444,437	614,010	543,863	689,238
Arrivals in June—					
Congo sorts	332,365	174,315	382,972	356,288	273,079
Other sorts	26,520	10,529	11,860	29,384	120,864
Plantation sorts	143,820	97,942	32,160	39,929	36,131
Aggregating	1,556,698	727,223	1,041,002	969,464	1,119,312
Sales in June	471,555	384,032	267,025	508,947	642,892
Stocks, June 30.....	1,085,143	343,191	773,977	460,517	476,420
Arrivals since Jan. 1—					
Congo sorts	1,651,140	1,417,416	1,642,593	1,655,626	1,716,209
Other sorts	73,041	69,166	246,953	167,522	554,564
Plantation sorts....	1,011,929	612,634	331,476	262,060	132,731
Aggregating	2,736,110	2,099,216	2,221,022	2,085,208	2,403,504
Sales since Jan. 1....	2,162,027	2,430,563	2,035,257	2,166,203	2,522,819

RUBBER ARRIVALS FROM THE CONGO.

JUNE 26.—By the steamer *Leopoldville*:

		Kilos.	
Bunge & Co	(Société Générale Africaine)	11,800	
do	(Comptoir Commercial Congolais)	9,600	
do	(Chemins de fer Grands Lacs)	750	
do	(Belgika)	1,750	
do	(Intertropical)	5,500	
do	(Comfina)	8,200	
Société Coloniale Anversoise	(Comminiéré)	1,650	
do	(Lomami)	4,950	
do	(Haut Congo)	9,750	
Credit Colonial & Commercial (Anc. L. & W. Van de Velde), (S. A.), (Cie du Kasai)		78,000	
do	(Velde)	6,000	
Charles Dethier	(American Congo Co.)	5,000	
Willaert Frères		3,000	145,950

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to June 1, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain.....*pounds*	2,628,387	4,829,547
To United States	1,522,632	2,936,581
To Belgium	507,592	1,378,854
To Australia	63,837	258,841
To Germany	60,407	111,009
To Austria	12,563	26,075
To Canada	12,121	.....
To Japan	7,508	99,611
To Italy	5,885	33,802
To Holland	2,282	992
To Sweden	39	....
To India	....	209
Total	4,823,253	9,675,521

(Same period 1911, 2,143,238; same 1910, 1,046,715.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 893,866 lbs.—710,500 lbs. from the Straits and 183,366 lbs. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

	Singapore. June 8	Penang. May 31	Port Swettenham. June 15	Total.
Great Britain..pounds	7,386,271	5,643,200	10,401,315	23,430,786
Continent	90,003	24,267	1,268,590	1,382,860
Japan	411,275	.....	.....	411,275
Australia	45,116	.....	.....	45,116
Ceylon	115	88,267	620,241	708,623
United States.....	2,504,964	107,733	.....	2,612,697
Total	10,437,744	5,863,467	12,290,146	28,591,357
Same period, 1912....	5,309,245	3,211,759	9,135,496	17,656,500
Same period, 1911....	2,421,941	1,764,641	5,994,795	10,181,377
Same period, 1910....	1,220,057	807,433	4,069,587	6,097,077